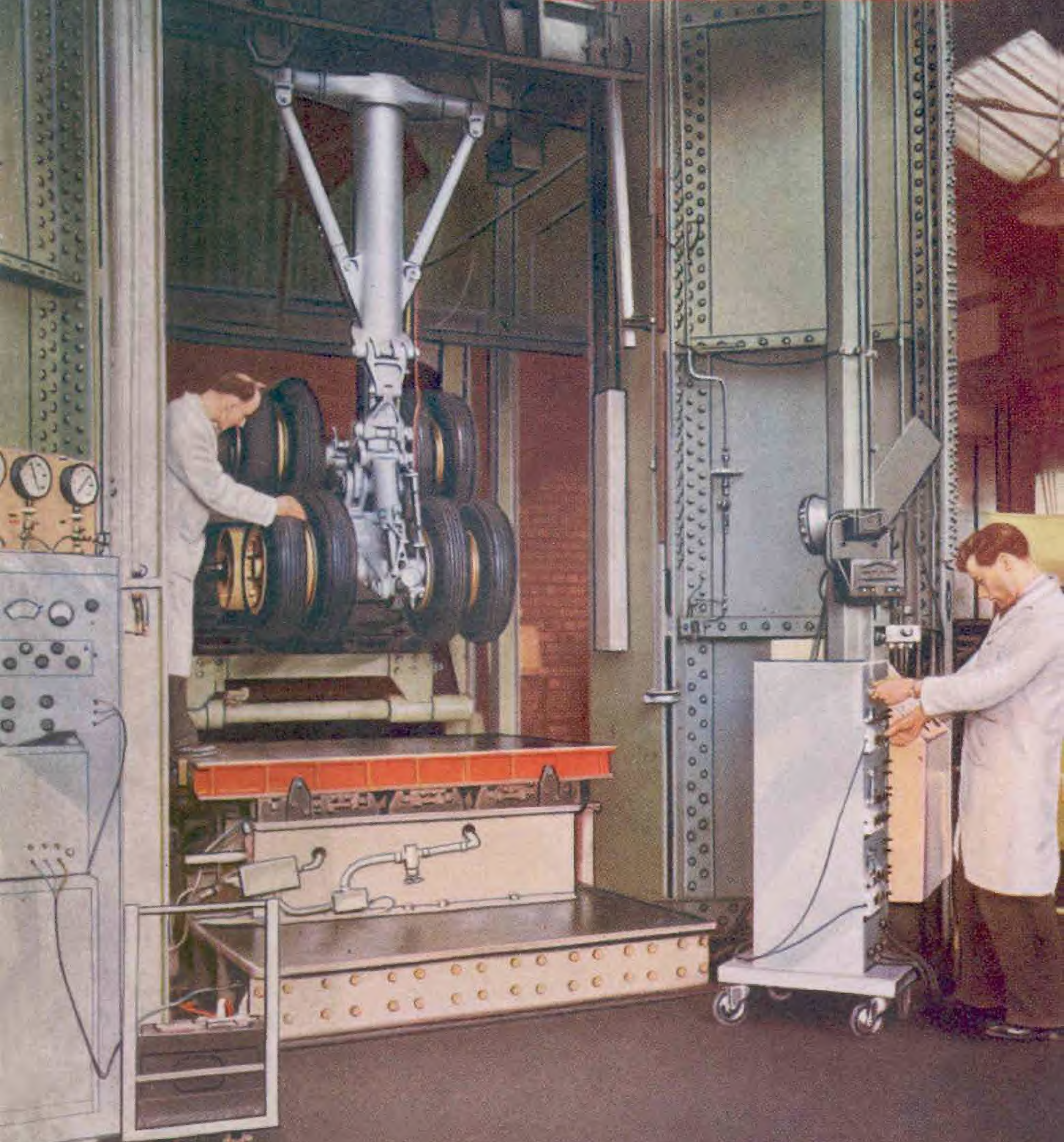


VOL. XL. No. 8

AUGUST 1955

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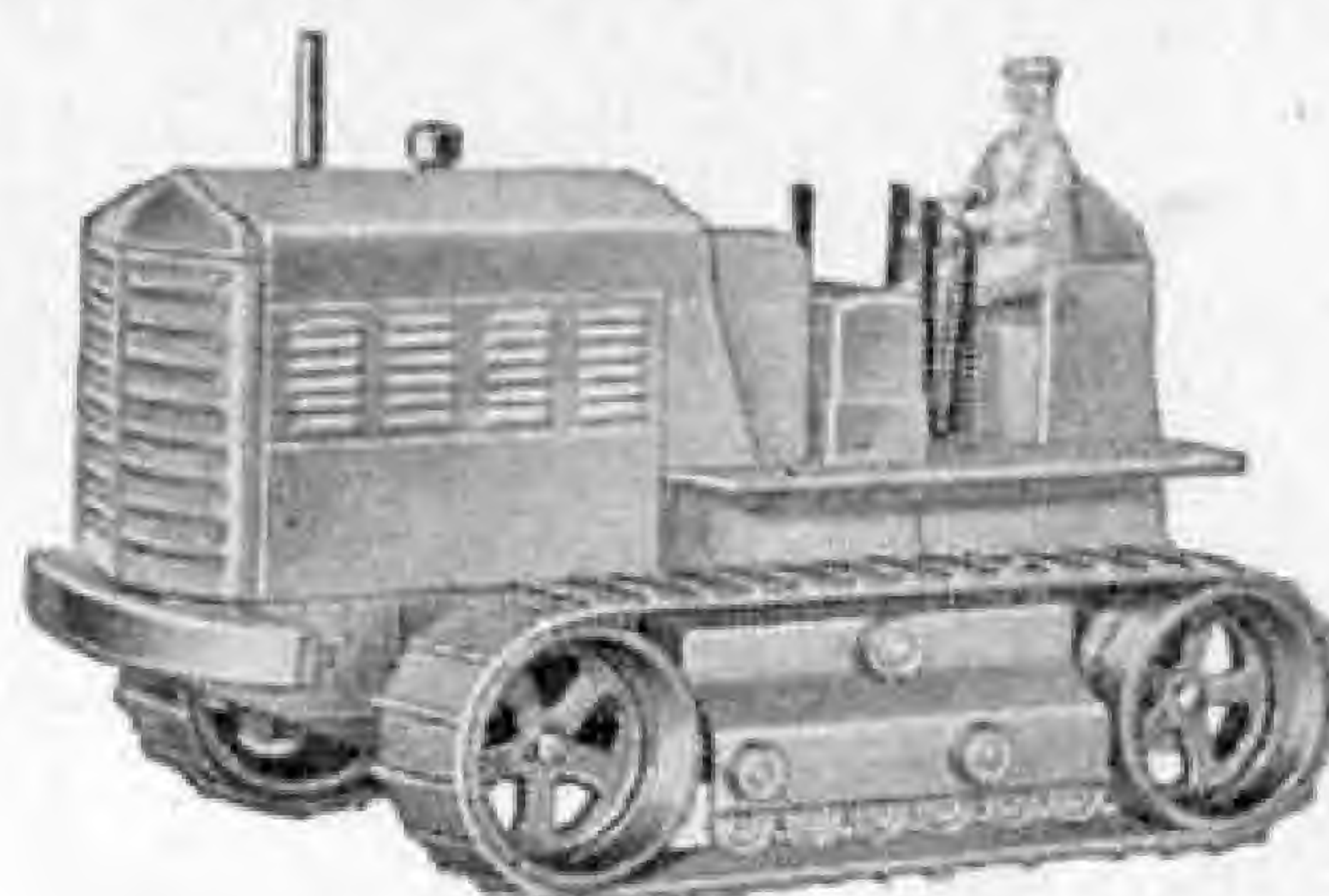
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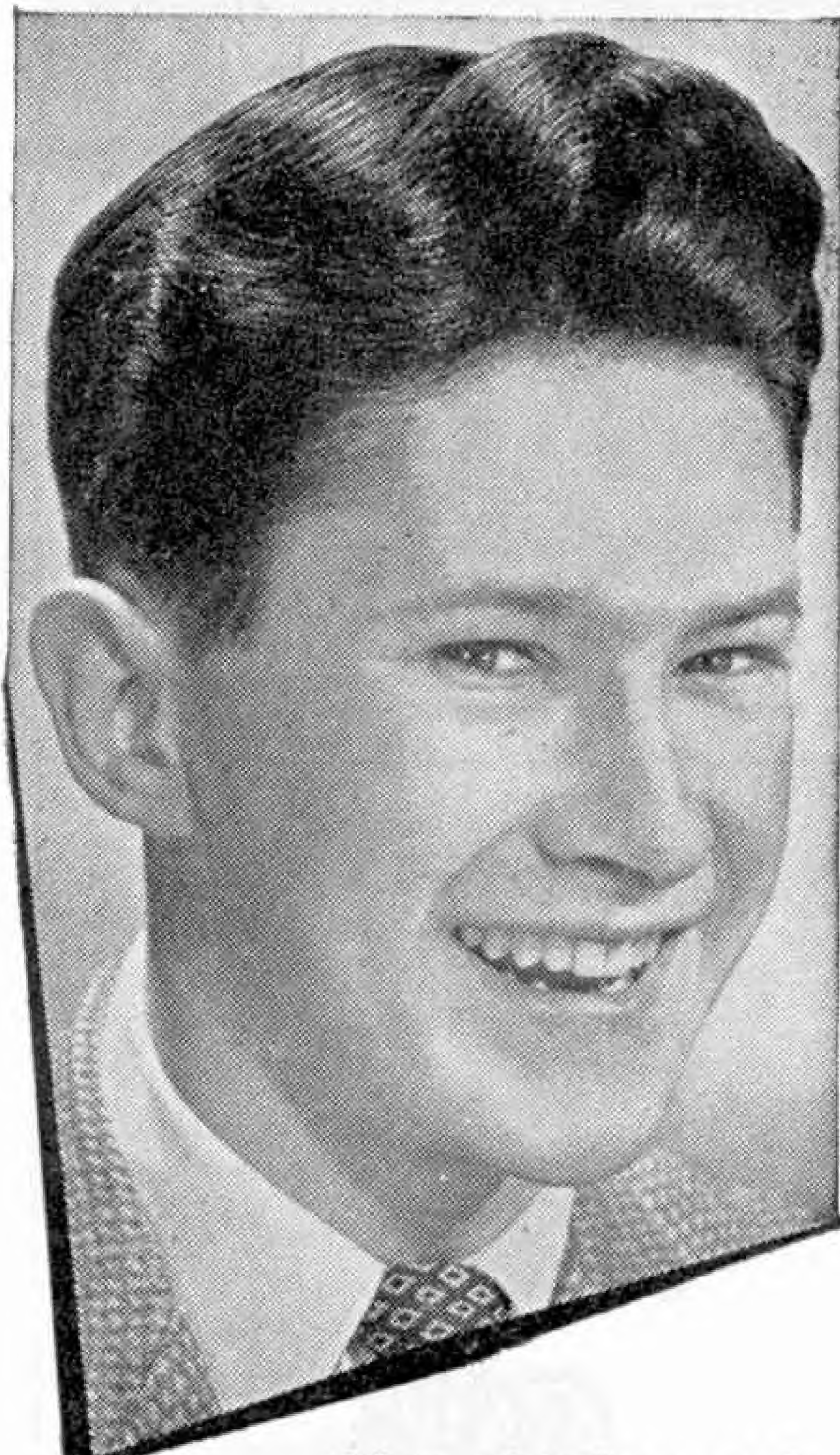


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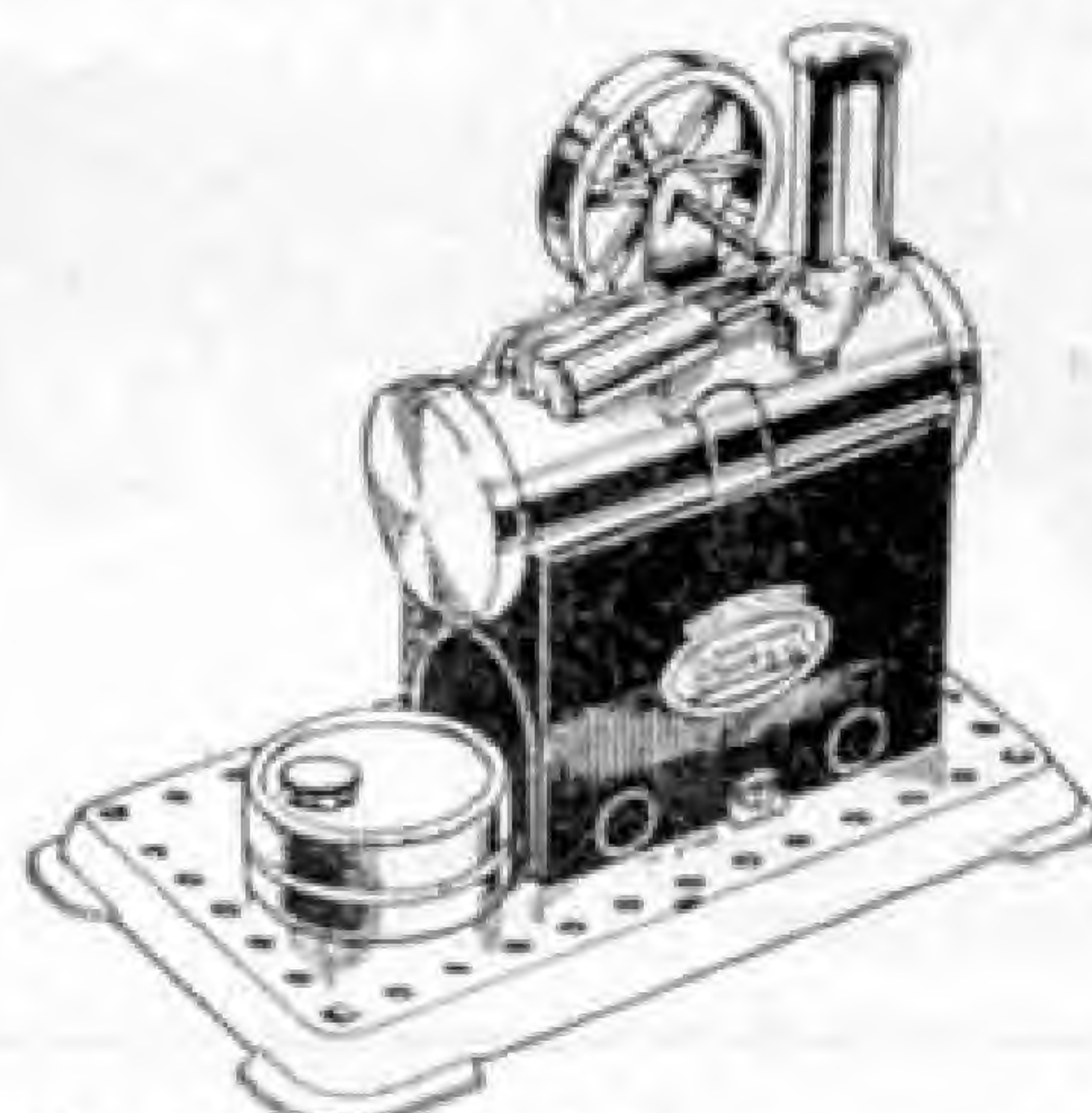
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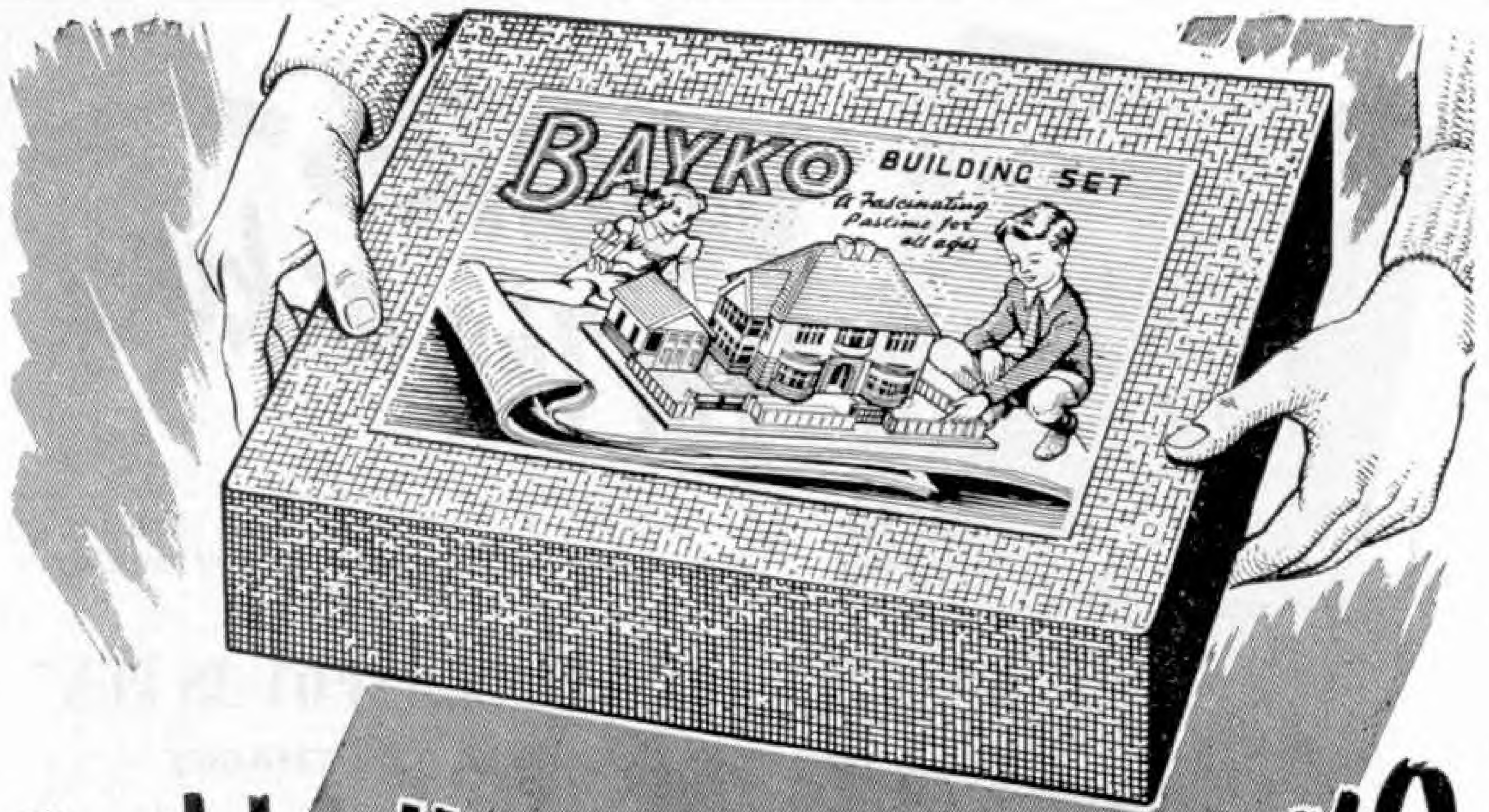
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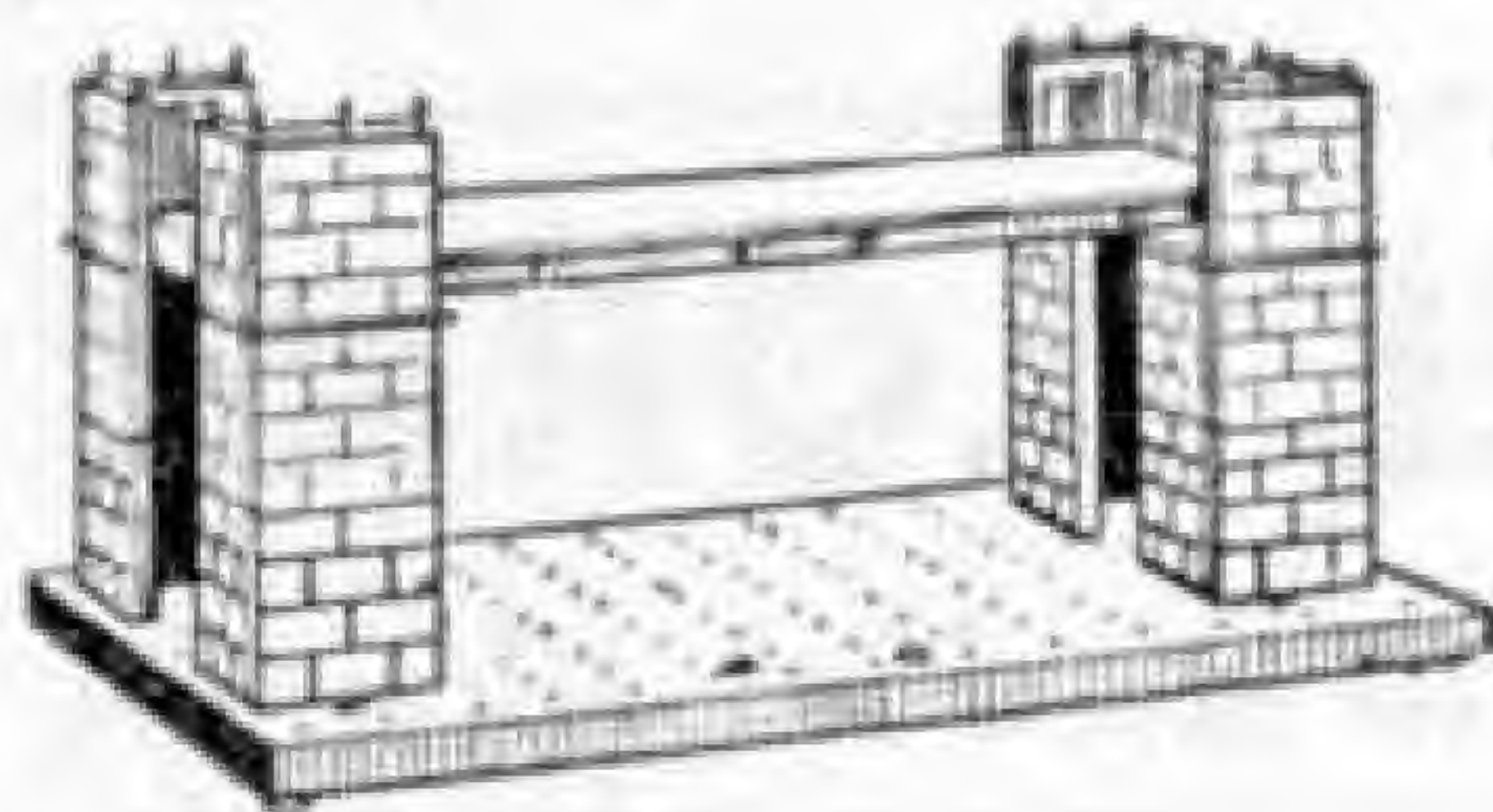
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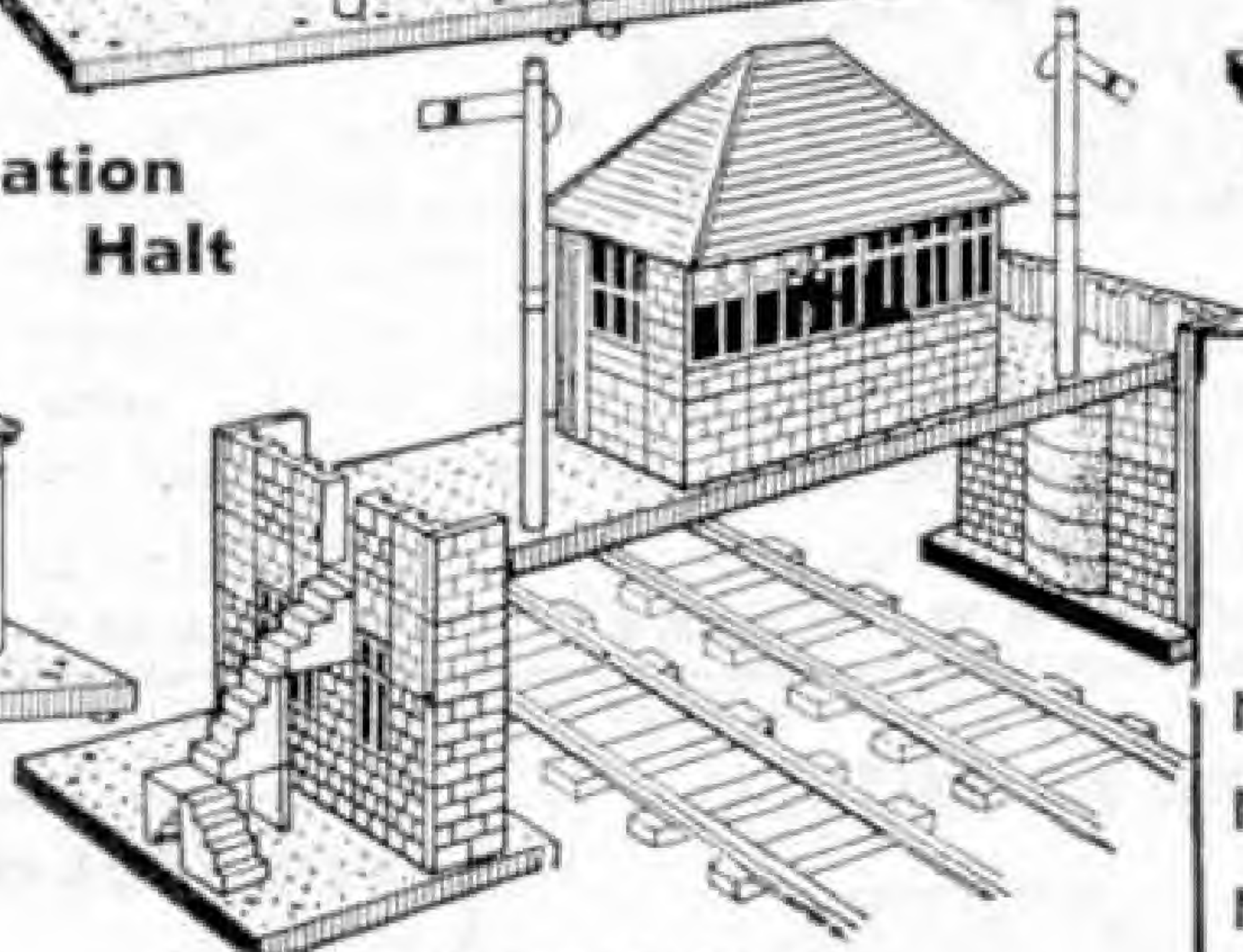


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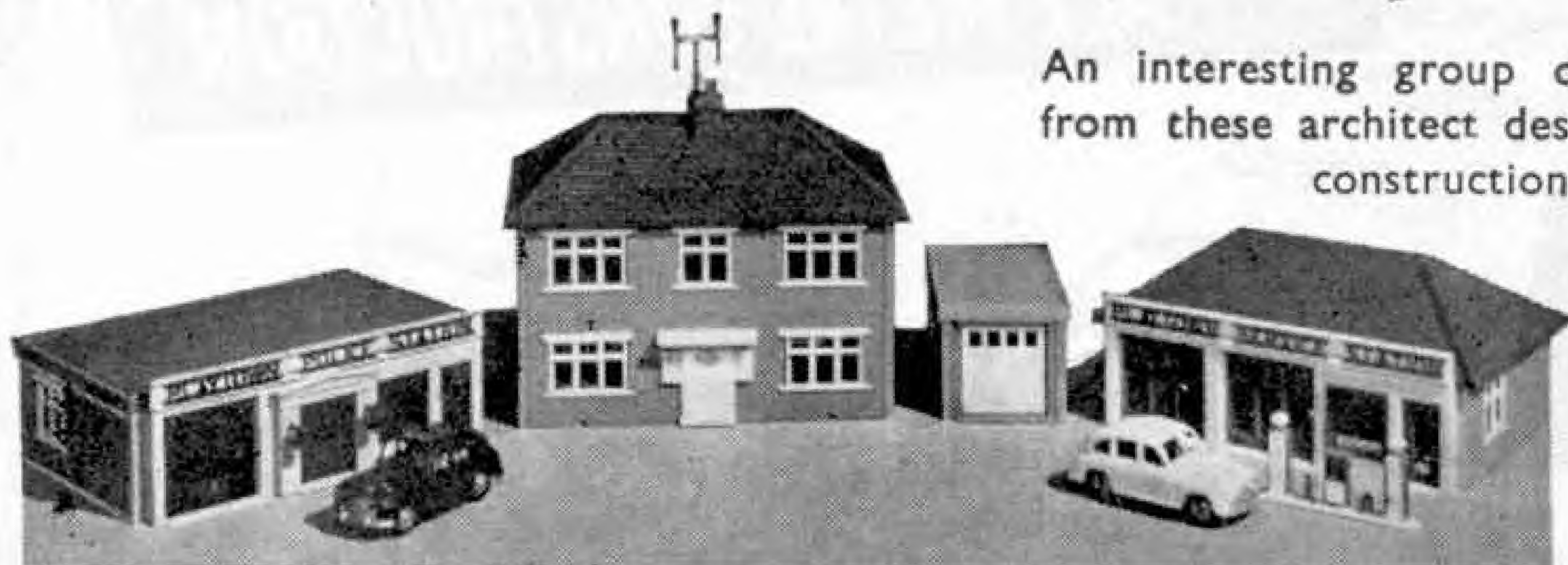
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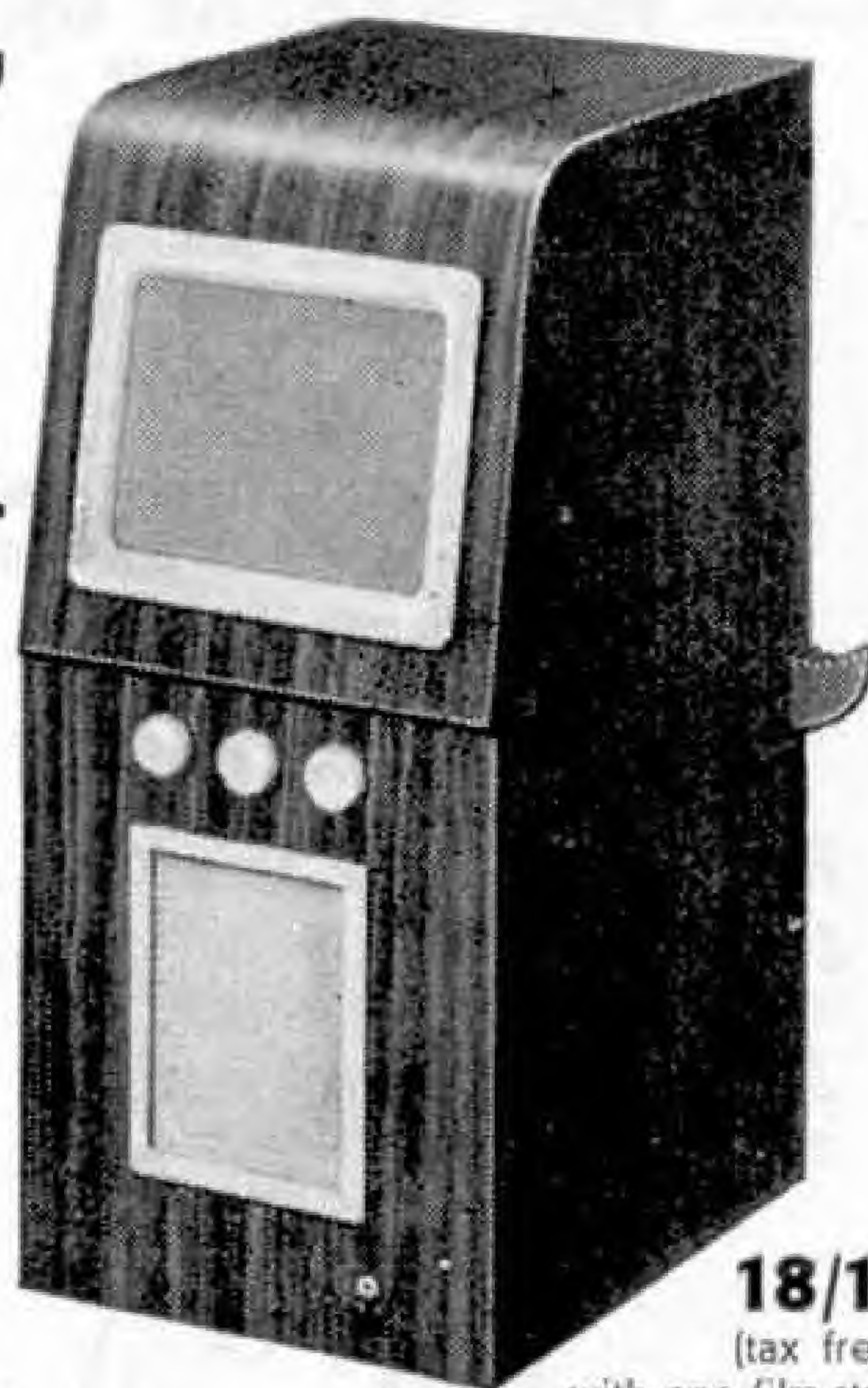
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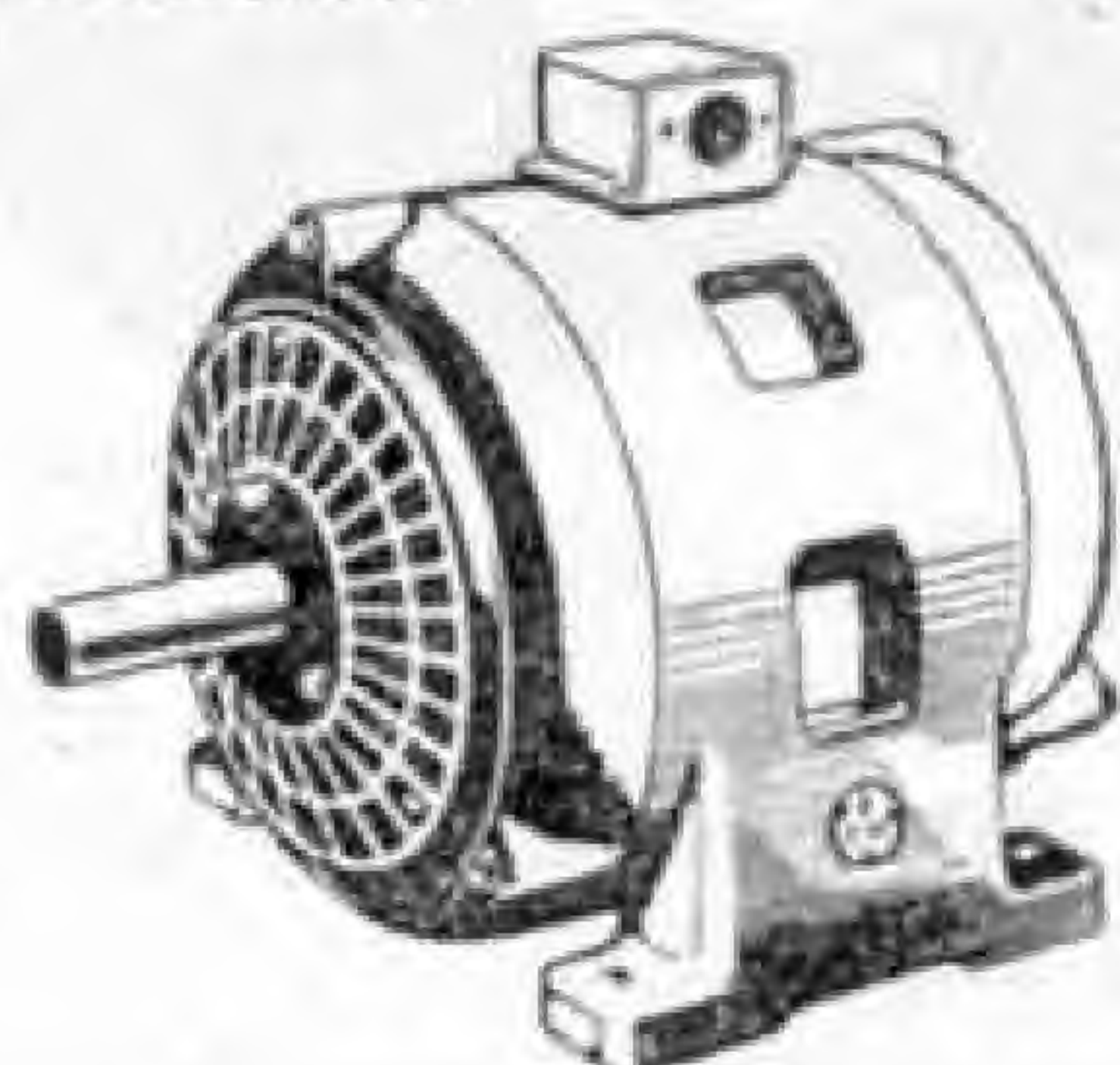


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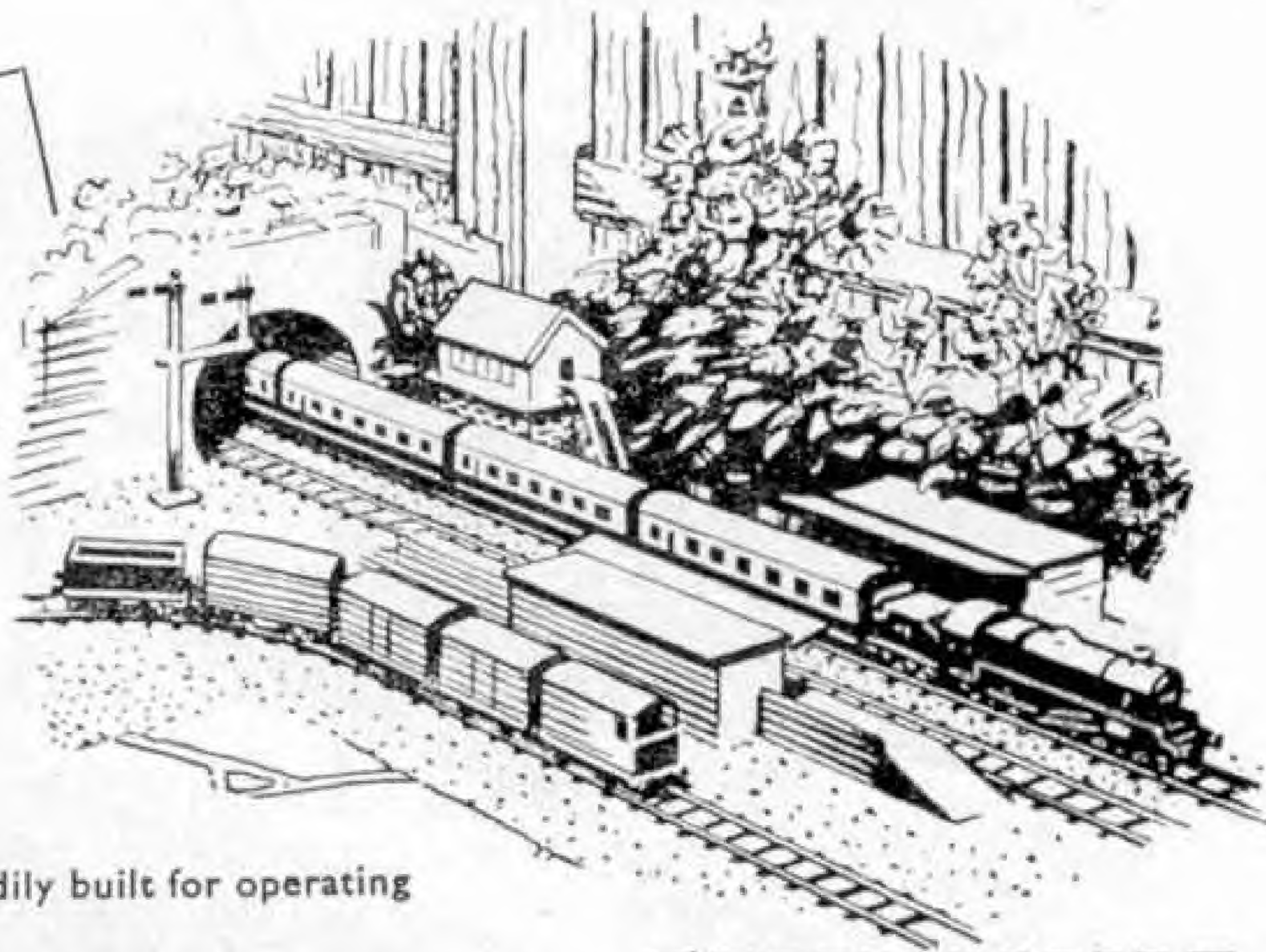
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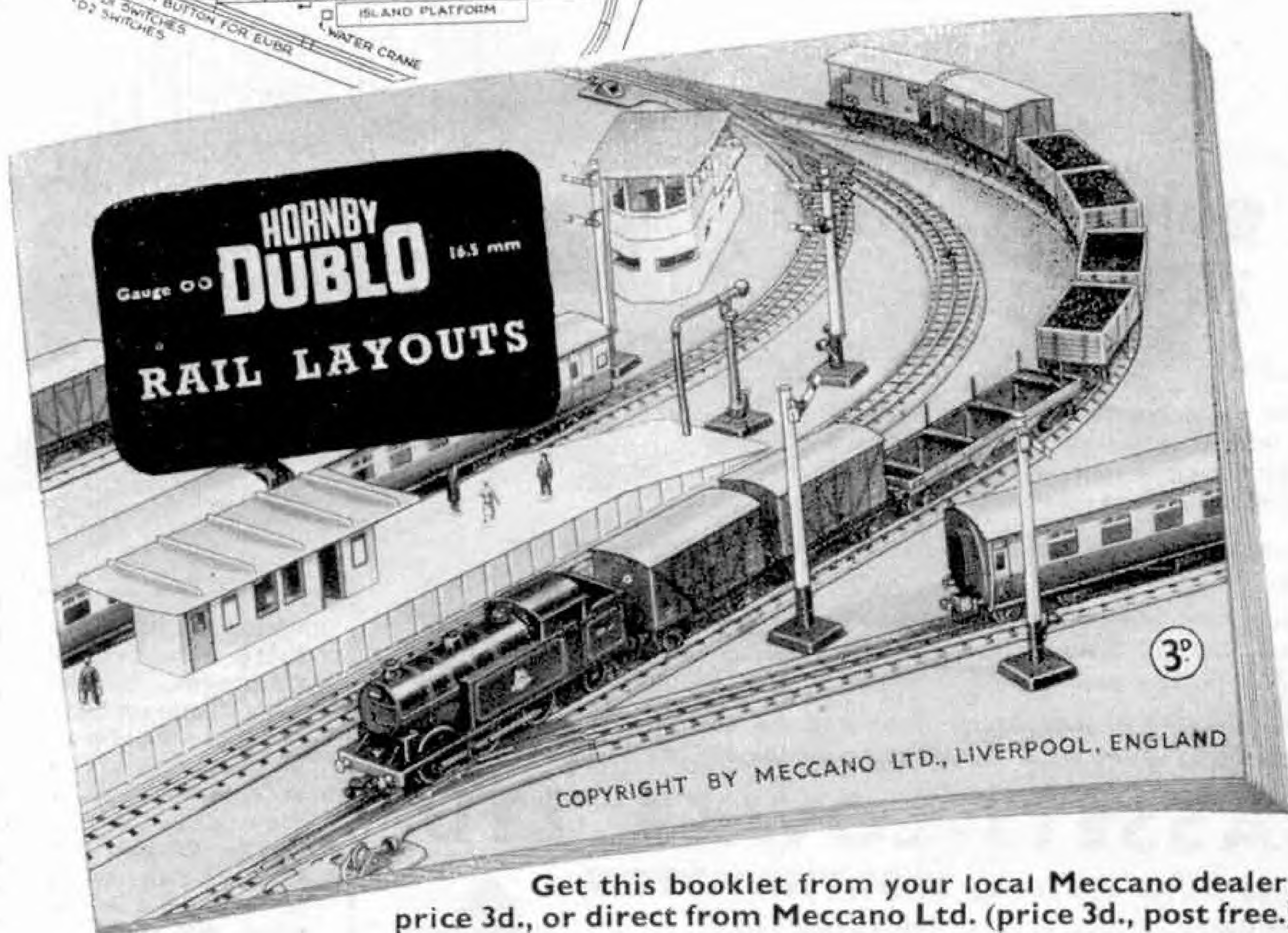
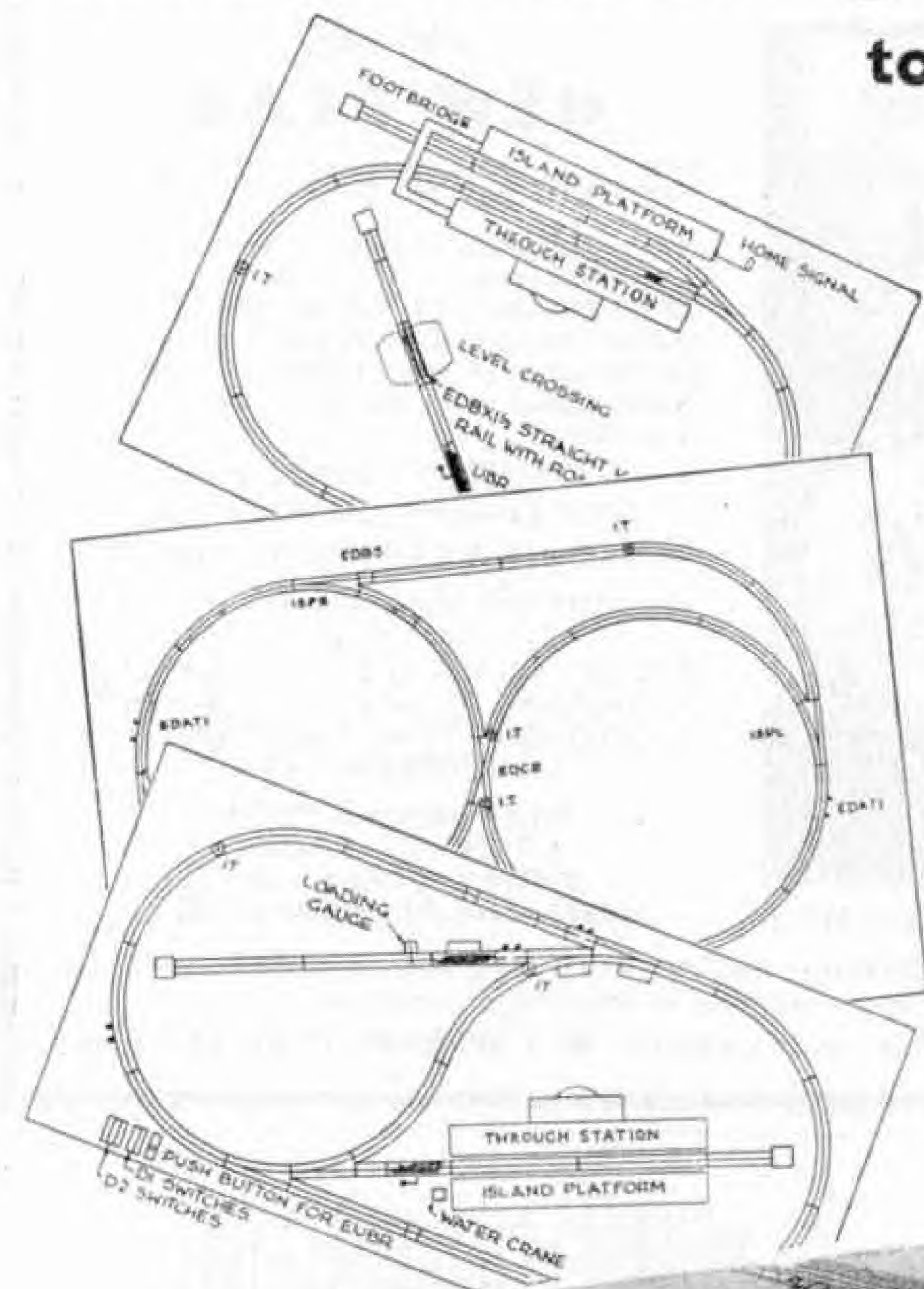
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# MECCANO

## MAGAZINE

Editorial Office:  
Binns Road  
Liverpool 13  
England

EDITOR : FRANK RILEY, B.Sc.

Vol. XL  
No. 8  
August 1955

### The Commonwealth's Largest Tunnel

There is no end to improvements! The New Zealand Government Railways have had for many years an incline that has provided one of the most spectacular railway ascents on any main line in the world; and now they are abandoning it in favour of a line with easy gradients.

This line runs northward from Wellington, the capital of New Zealand, to Masterton. It crosses the Rimutaka mountains, which from the northern side are climbed by the Rimutaka Incline, with its average gradient of 1 in 15, for which special locomotives are provided at the rate of one for each three coaches. The locomotives are scattered along their train, and when all are hard at work charging up the incline the scene is one to delight those who love such exhibitions of engine power.

The climb on the new line will not be as impressive—but it will probably be more comfortable and it will certainly be quicker. To compensate railway enthusiasts for the loss of the spectacular climb, the New Zealand Government

Railways have provided a tunnel that is certainly remarkable, for it is the longest in the British Empire. Until its completion

this distinction was held by another New Zealand tunnel, that at Otira, in the South Island, which is more than five miles long. The new tunnel, with its length of 28,864 ft., or about 5½ miles, now has the advantage by about a quarter of a mile.

The stories of the Rimutaka Incline and of the new line with its great tunnel are full of real interest, and I am sure you will welcome two articles dealing with them. The first of these, describing the incline and illustrating how it was climbed, will appear in the next issue of the *M.M.* and the story of the new tunnel will be included in the October issue.

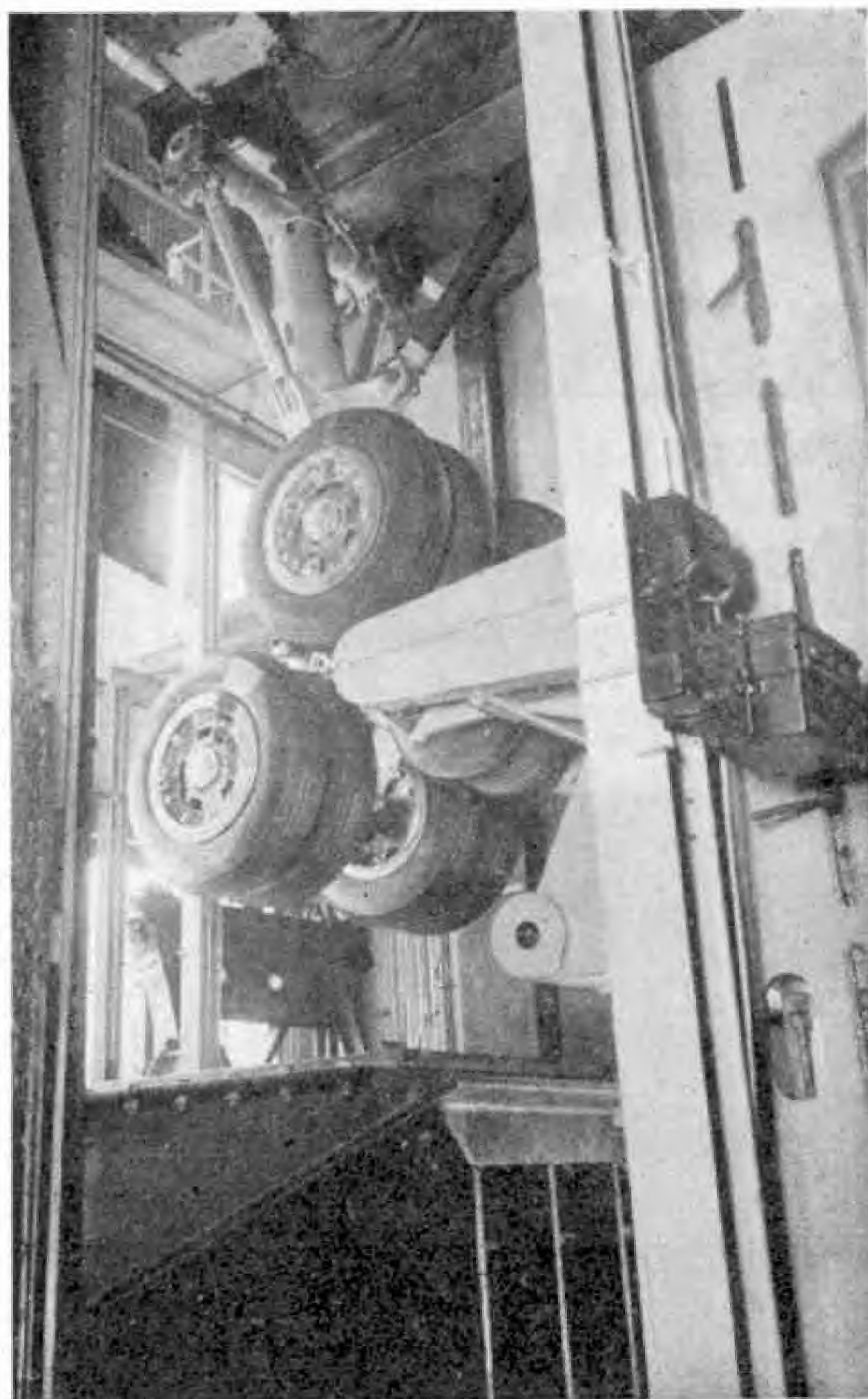
Did the Chinese really invent the magnetic compass 4,500 years ago, as has so often been asserted? For the answer to this question see next month's *M.M.*



Have you ever seen a pillar box with a vertical slot? This one, photographed by F. Read, is at Mudeford, near Christchurch, Hants. The idea of the design was that a sack to receive letters could be hooked up behind the slot.

*The Editor*





## Testing an Aircraft Undercarriage

on a large German transport machine during the war years.

The first multi-wheel bogie undercarriage in British aircraft was an experimental four-wheel unit fitted to a Lincoln that originally underwent landing and taxiing trials in March 1947. This undercarriage was developed by a firm that during the war years produced 5,900 complete sets of landing gear for the world famous Halifax bomber, and pioneered the development of bogie undercarriages in Great Britain.

This firm, Electro-Hydraulics Ltd., of Warrington, are specialists in the design and production of aircraft undercarriages, and hydraulic equipment, and as such are equipped with extensive research and development facilities.

In the field of undercarriage performance the methods adopted by Electro-Hydraulics Ltd. are now well known. Each undercarriage supplied for a new aircraft must have its performance verified, and must therefore undergo a lengthy programme of tests.

In addition, development work on new types of undercarriage must go on with a view to achieving greater efficiency. In the Research Department of Electro-Hydraulics Ltd. two drop test machines are installed, one of these being the largest vertical guide machine in this country.

This is 35 ft. high with a capacity of 150 tons, and is considered to be one of the most comprehensive in the world.

These machines are used to reproduce all the various aircraft

landing conditions in the laboratory. In addition to drop test performance, ground manoeuvrability of an undercarriage is of great importance. Tests simulating steering and castoring conditions are carried out to study some of the characteristics of nose undercarriages, about which there is still a lot to be learned.

THE job of the aircraft undercarriage designer is an extremely important one, and the need to cover all requirements successfully is a challenge to his skill and ingenuity. Many experiments have been made in the past to find successful alternatives to a wheeled undercarriage, such as trolleys that are left behind when the aircraft is airborne, catapulting the machine into space, etc. The only practicable alternative appears to be the skid, but again fresh problems occur, such as difficulty of manoeuvring on the ground after landing, difficulties of braking and ground clearance, etc.

Many attempts to spread the weight of the aircraft have resulted in revolutionary types of undercarriages, such as various forms of caterpillar tracks, and the unusual multi-wheel arrangement used

The picture above shows an early stage in the drop test of a multi-wheel aircraft undercarriage in the special machine built for this purpose by Electro-Hydraulics Ltd., Warrington, to whom we are indebted for the illustrations on these pages. Our cover, showing the drop test machine, is from a colour photograph reproduced by courtesy of "The Times Review of Industry."

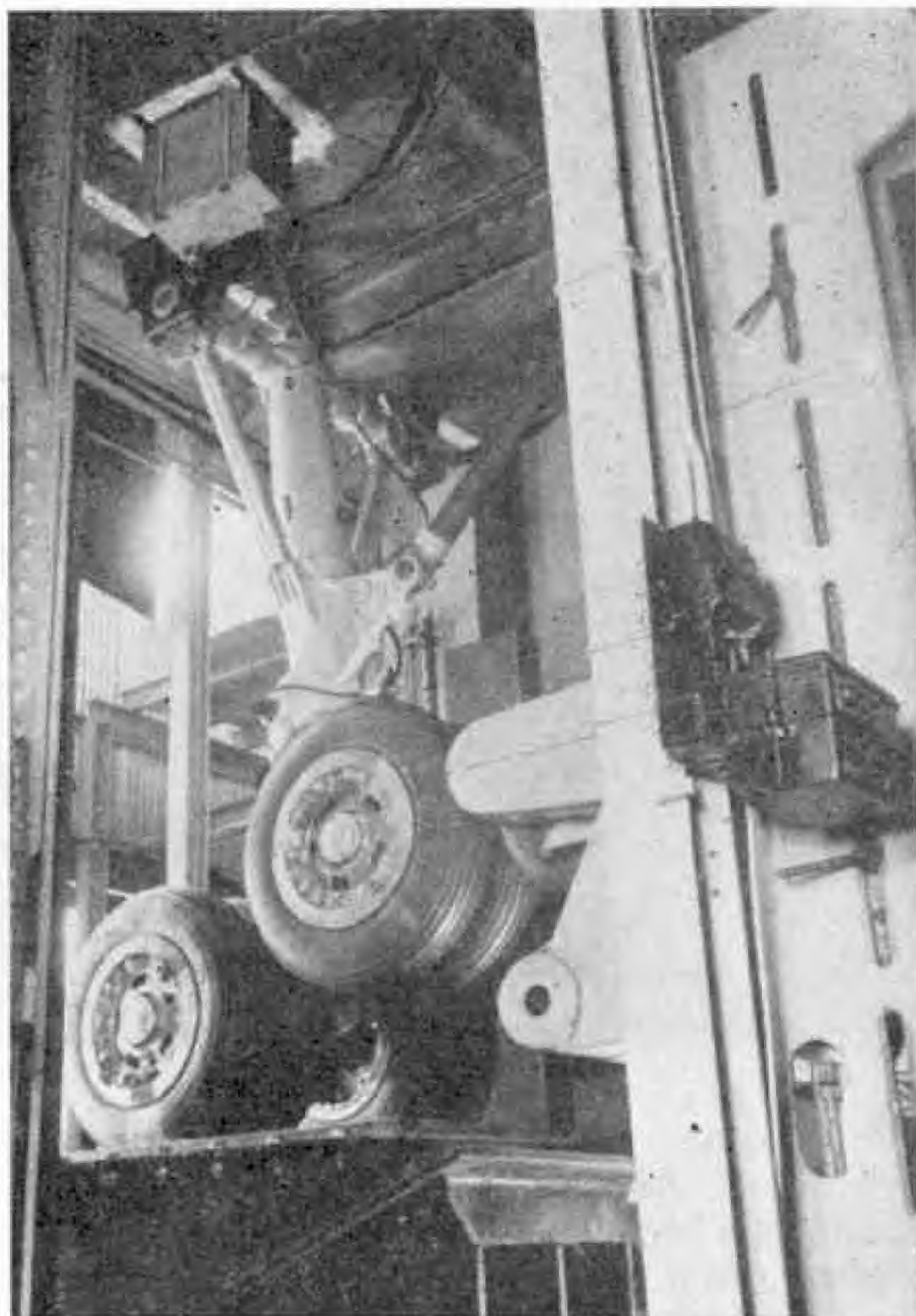


On the right the drop test is seen carried a stage further. The back wheels of the undercarriage under test have reached the side load table.

To be present in the Research laboratory during the drop testing of an undercarriage is an exciting experience. The undercarriage is mounted in the machine, as shown on our cover and in the illustrations on these pages. Electronic recording gear has previously been placed in position and connected up. Technicians take up their positions behind safety screens, a protection that allows close observations of a test without danger to the observer should anything happen.

By means of large steel plates the drop carriage weight is increased to one appropriate to the aircraft for which the undercarriage is designed. Large hydraulic jacks are used to raise the loaded carriage to a pre-determined height, which the technicians call the drop height. The maximum height used produces a landing that is far worse than usually occurs in practice.

The next operation is to engage the electrically-operated wheel spinning gear. The object in pre-spinning the wheels is to reproduce the loads in the undercarriage structure that occur during an aircraft landing when the wheels, which are not rotating whilst in the air, are suddenly spun up to full speed, which may be 100 m.p.h. or more, on contact with the runway.



A further condition that has to be met is encountered during a drift landing. That is with a cross wind acting on the aircraft and tending to cause what is often described as a crab landing. This condition is reproduced in the laboratory with a complicated piece of machinery known as a side load table. The top of the table, which is coloured red in the cover picture, is actuated electro-pneumo-hydraulically.

The foregoing describes the technicalities of a drop test. What the visitor sees when watching this work going on is first an impressive array of instruments used to measure and record the functions. The undercarriage is raised to drop height, spin up gear is fed in and wheel spinning commences. This part of the test takes approximately two minutes. When stroboscopes indicate that the correct wheel speed has been reached—and by now the wheels have produced quite a lot of noise—the mechanism (Continued on page 458)



The end of the drop test, with all wheels on the side load table. The actual drop recorded in these three illustrations occupies only two tenths of a second.





This view of London Airport shows one of the L-shaped ramps by which passengers pass directly to and from their aircraft. British European Airways photograph.

long-range operators such as Qantas, Pan American and T.W.A., will continue to use the old temporary buildings on the north side of the Airport, until the second block of passenger buildings has

IT is nine years since I first visited London Airport. Then the passenger "buildings" consisted of a row of large brown tents, flapping and cracking in the wind that swept across the bleak runways, and surrounded by a sea of mud. On sighting them, the first American passenger to alight at the Airport is reported to have said *Gee, where are the elephants?*

There is nothing circus-like about the new "south east face" passenger buildings that came into use on 17th April, in the central terminal area of the Airport. On the contrary, they combine elegance and efficiency in a manner that will make London Airport the envy of the world when the whole £26 million job is completed in due course.

Although ultra-modern, the buildings are not ugly or "arty-crafty". Their architect, Mr. Frederick Gibberd, has used red brick and acres of plate glass to give a warm, very British appearance from the outside, and plenty of light inside. Everything is on a grand scale, for it is expected that by 1960 the Airport will have to cope with 3½ million passengers a year.

At the moment, the central area is being used for short and medium-range services operated by all the main European airlines except B.O.A.C., Airwork, Hunting-Clan and K.L.M. These four, together with the

been completed in the central area.

Even now, the visitor who merely wants to watch air liners coming and going, or to see how his Income Tax is being spent, is made as welcome as any First Class passenger. He can sit or stand on the roof of the new passenger buildings, have a meal in the smartly equipped restaurant, or a sandwich at the snack bar. Soon a special series of roof terraces will be opened, complete with their own cafes, bars, ice cream kiosks and other attractions to cater for over 10,000 spectators a day.

But the main purpose of the buildings is to speed passengers on their way to the four corners of the earth, with as little fuss and delay as possible. So, naturally, there are many things that the casual visitor does not see. To find out

something about them, let us see what happens when an airline coach full of passengers arrives at the Airport.

The approach to "London Airport Central" is exciting, because the coaches drive down a slope and into a half mile long tunnel, which passes underneath one of the main runways. At the far end is what seems like a little town, with roads, roundabouts, lawns and huge car parks, dominated by the impressive 127 ft. high red brick and glass control tower, which is the nerve centre of the Airport.

## The World's Finest Airport

By John W. R. Taylor



The efficiency of the new passenger handling technique becomes apparent from the moment travellers leave their airline coach. Entering by one of a series of "Channels", they go by escalator up to the passenger hall on the first floor, which seems as vast and business-like as a London railway station, but infinitely more pleasant. Meanwhile, their luggage is whisked away on a conveyor belt to Customs.

The passenger hall, or Concourse as it is called, is the heart of the new building, and is complete with large, comfortable seats, desks for airline receptionists, bars and children's rooms. From it, a broad staircase leads to the upper floor, which offers a high standard of comfort to passengers or their friends with time to spare. Here, in an atmosphere of deep carpets, armchairs and soft lighting, are small shops, a spacious lounge, a restaurant and a snack bar. From here, too, French windows lead out on to the roof gardens and "waving base", which overlooks the marshalling apron with its rows of air liners, surrounded by fussing swarms of fuel tankers, coaches, baggage trolleys, starter units and duffle-coated men with walkie-talkie radio sets strapped to their backs.

Few passengers have much time to look around, for the object is to get them on their way as quickly as possible.

The impressive 127 ft. high Control Tower that is the nerve centre of London Airport. British Overseas Airways photograph.

A call over the loudspeaker system tells them that their flight is ready to depart, and asks them to proceed from the Concourse, through a numbered door into the Customs hall, where they rejoin their luggage.

Staying in their "channel", they pass on through Health Control and Immigration to the waiting room, which faces on to the glass-fronted "air-side" gallery and aircraft apron.

From there, they walk along the gallery and down glass-walled L-shaped ramps, directly to their aircraft or into a coach if it is on the far side of the apron. Their luggage will already have been taken by conveyor belt from the Customs hall and loaded in the aircraft.

A similar route, in reverse, is followed by passengers arriving by air; and the whole process is working very smoothly.

There is much more to this fine new Airport that even passengers do not see, but which contributes immeasurably to their safety and convenience.

Eventually there will be a second passenger handling building like the present one, on the north east face of the terminal area, for passengers on long-range services. Between the two, forming the point of a shallow V, will be an operations centre, which is already partially finished. It will house airline offices, crew briefing and meteorological rooms, and will have a flat roof for visitors, linked to the passenger buildings by bridges.

Inside the V stands the control tower, which is packed with an electrician's paradise of radio, radar and other complex equipment. At the very top of the tower, inside a little glass "bandstand", are the aerodrome control staff. Below them, in a gallery on the front of the tower, are the approach controllers. They work in close collaboration with the Southern Air



Traffic Control Centre ("London Airways"), which was moved this summer from Uxbridge to the N.W. boundary of the Airport.

Between them, the staffs of these three control rooms can do everything that is humanly possible to guarantee the safety of aircraft flying over Southern England and into the Airport.

The invisible eyes of the Air Traffic



Entrance of the  $\frac{1}{4}$ -mile tunnel to the Central Area of the Airport. The tunnel passes underneath one of the main runways. Photograph by J. W. R. Taylor.

Control radar scanners pick up every aircraft within a radius of 130 miles of the Airport giving its position, height and track. In this way, the controllers can guide pilots of air liners safely down "air corridors", telling them the height, speed and track they must fly to avoid any possibility of collision.

When the aircraft come into, or leave, the Airport, "London Airways" hands over to "London Approach" in the control tower. Here too, controllers can see as blips of light on their radar scanners every aircraft near the Airport. If several approach at once, they can be "stacked" at different heights over Epsom and Watford radio-range stations, and then brought in one at a time at two-minute intervals. In bad weather, aircrews have full Instrument Landing System and Ground Controlled Approach facilities available, to guide them in to safe "blind" landings.

The aerodrome control staff in the tower are responsible for aircraft and vehicles on the ground; for operating the maze of aerodrome and taxi-track lights that guide air liners to, from and into the runways at night; and for aircraft taking off in all weathers and for aircraft landing in good weather. Approach control, with their G.C.A. "talk-down" equipment, are responsible for getting the aircraft to the



Airport, "stacking" and bad weather landings.

But passenger safety is not ensured only by the skill of the crews who fly the aircraft and the men and women who guide them with radio, radar and other aids. Much depends on the airworthiness of the air liners and, at London Airport, the B.E.A. and B.O.A.C. Engineering Bases, where aircraft are serviced between flights, are as impressive and efficient as the new passenger buildings and control tower.

I have already described the fine B.E.A. Base in the *M.M.* It is now finished and, not far away, the immense new B.O.A.C. hangars are also nearing completion. No photograph could do justice to them, for the four hangars are each big enough to house several Stratocruisers. Between them and above them are workshops and offices for the Corporation's Head Office and operations staff.

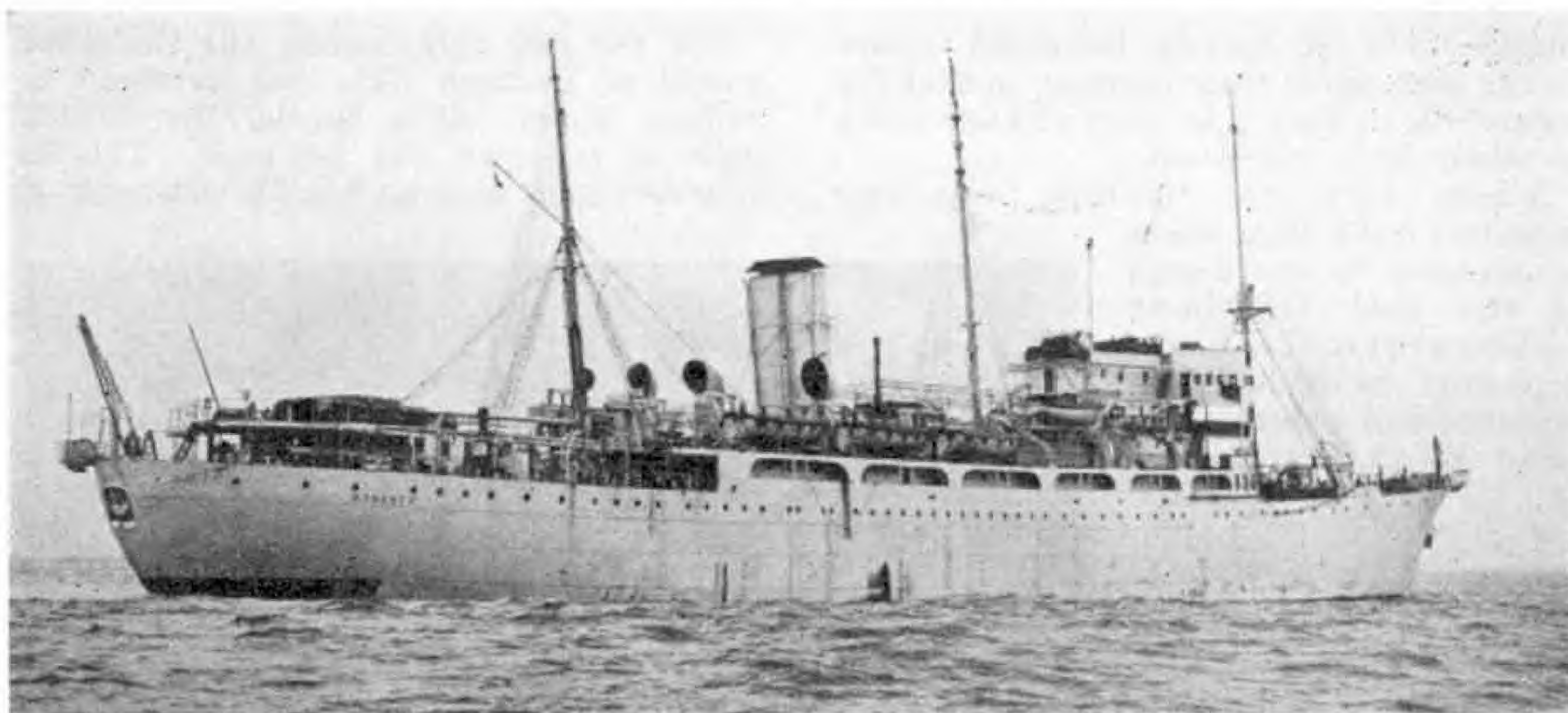
The whole gleaming white block of buildings cost millions of pounds. But no Briton who sees it will begrudge a penny of the price. If our airlines are to remain the best in the world, they must have the finest possible equipment and servicing

facilities on the ground, as well as the best air liners that money can buy.



B.O.A.C. Stratocruisers outside the corporation's new base at London Airport.





# First Transatlantic Telephone Cable

By A. Tranter

FOR nearly a century engineers have been dreaming and planning to enable people in the Old World and the New to speak to each other by means of a transatlantic telephone cable. Now this dream appears a reality, for long and patient research and development in the Bell Telephone Laboratories in America and the G.P.O. Research Station, Dollis Hill, North London, will soon transform telecommunications between the United Kingdom and the North American continent.

From Oban, halfway up the west coast of Scotland, to Clarenville, in Newfoundland, is a distance of about 1,950 nautical miles. The first link was laid this summer by the 8,050 ton H.M. Telegraph ship *Monarch*. Next summer a return cable will be laid, so that at the end of 1956 it will be possible to telephone Washington, New York or Toronto from Britain, or vice versa, in the certain knowledge that no matter what the time of day, or what the weather conditions, both sides will be loud and clear, as though making an ordinary trunk call in Great Britain.

The earliest telegraph cables

were laid in the 1860's and 1870's, and there are now twenty such lines spanning the Atlantic. It may be asked why it is that, as there has been a transatlantic telegraph link for so long, it is only now that a telephone link is to be laid.

The answer is that the transmission of speech by wire over long distances is a very much more complex affair than sending out

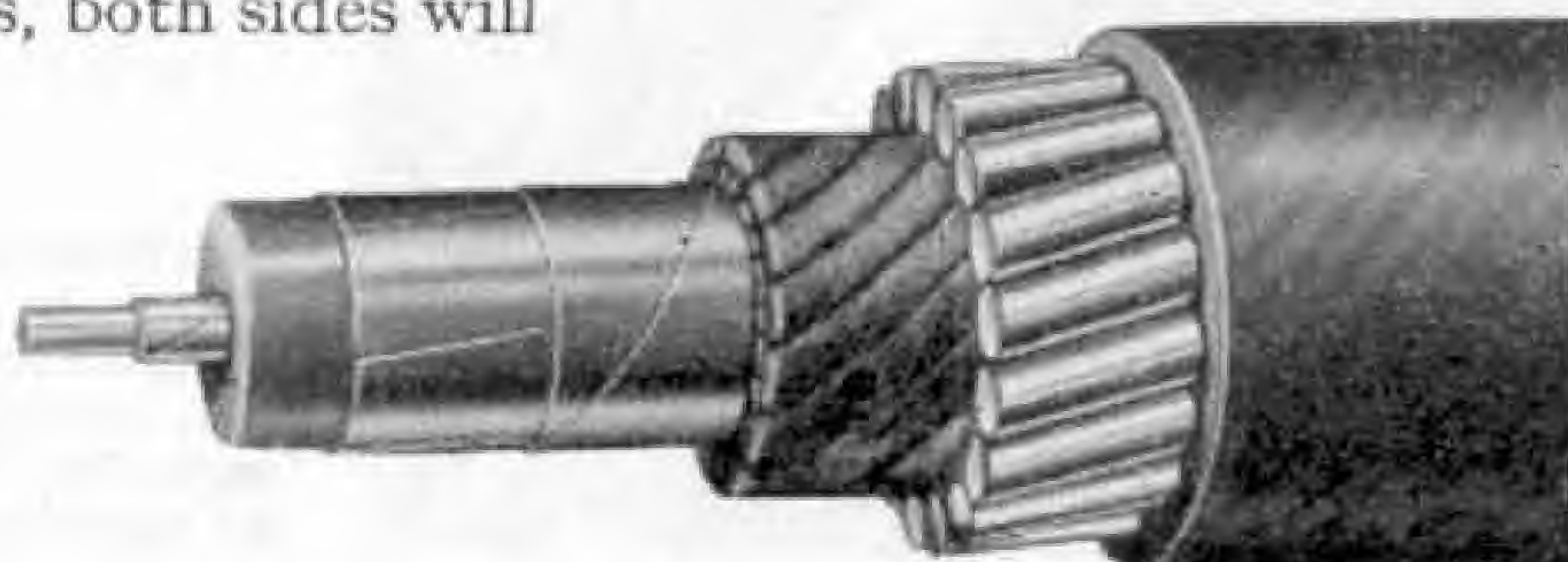
simple Morse signals. As speech currents pass along a cable they become weaker and have to be "boosted" by amplifiers. Unfortunately, amplification tends to cause circuit

noises to become excessive, and it is not practicable, over a distance of 2,000 miles, to provide telephone circuits using amplification at the shore ends only.

To rectify this loss of strength, a system of amplifiers is being built into the cable. Each "repeater," as it is called, has the task of magnifying all conversations a

millionfold. On the Atlantic crossing, fifty-two of these repeaters, spaced at intervals of about 40 miles, will pick up the rapidly fading voice signals and

The cable that will allow direct telephone communication between Great Britain and North America will be loaded into H.M.T.S. "Monarch" for laying on the bed of the Atlantic Ocean between Oban, Scotland, and Clarenville, Newfoundland. This vessel is illustrated at the head of the page, by courtesy of H.M. Postmaster General, and below is a section of the cable to be used for intermediate depths, which has a diameter of 1.4 in.

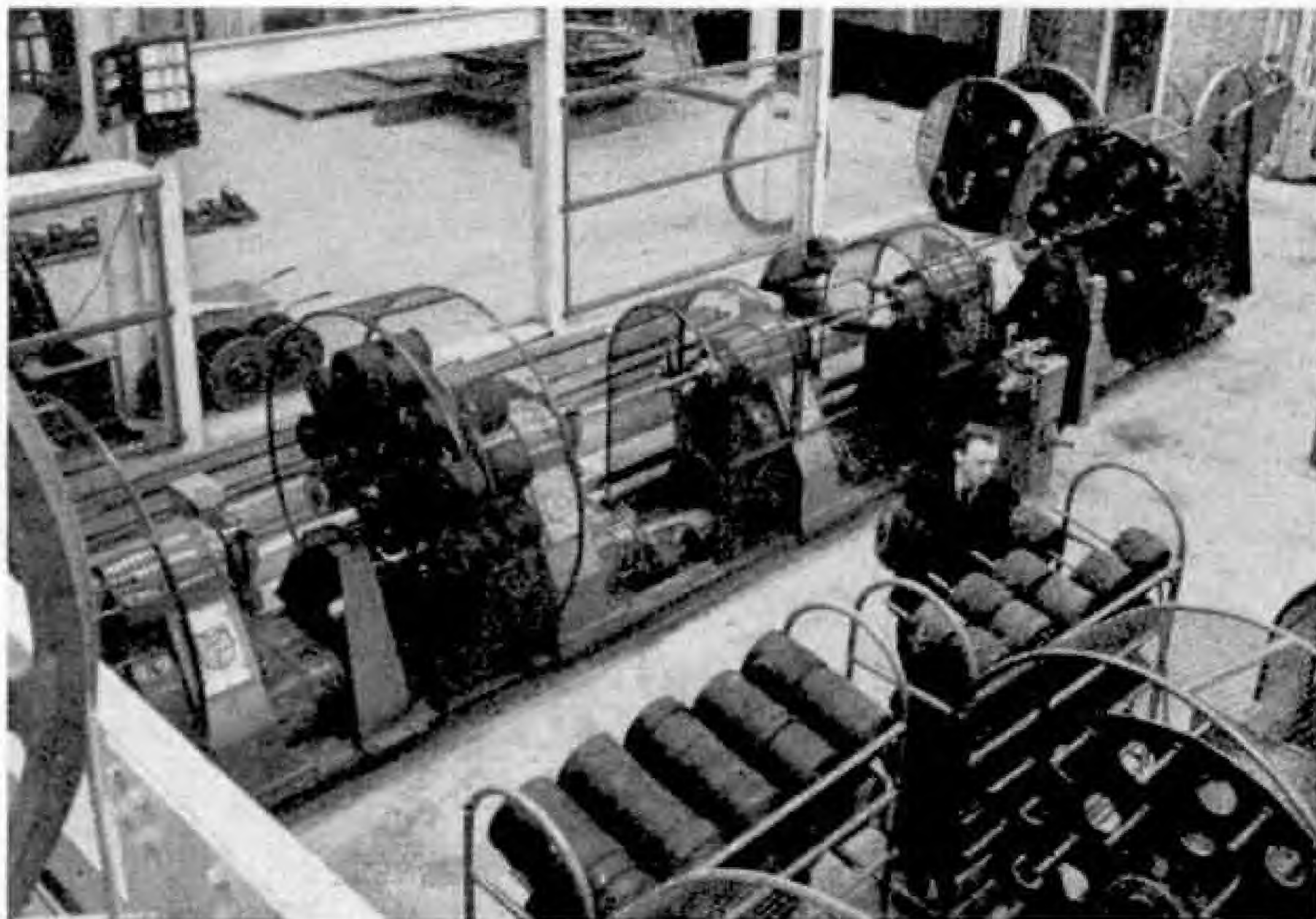




thrust them at greatly increased power on the next lap of their journey, so that the words will be nearly as clear at Clarenville as when they left Oban.

These deep-sea, flexible, one-way repeaters have been made in America to the design of the Bell Telephone Laboratories. Each repeater will consist essentially of a three-stage feed-back amplifier

The machine seen in this illustration applies copper return tapes and jute bedding for the protective armouring wires to the insulated conductor.



designed around long-life valves, and no fewer than sixty other delicate electrical components. They are built in the form of narrow tubes, under 3 inches in diameter.

Being thin and flexible, they form part of the actual cable and can be coiled in the ship's cable tank and paid out over the ship's cable drum and sheaves.

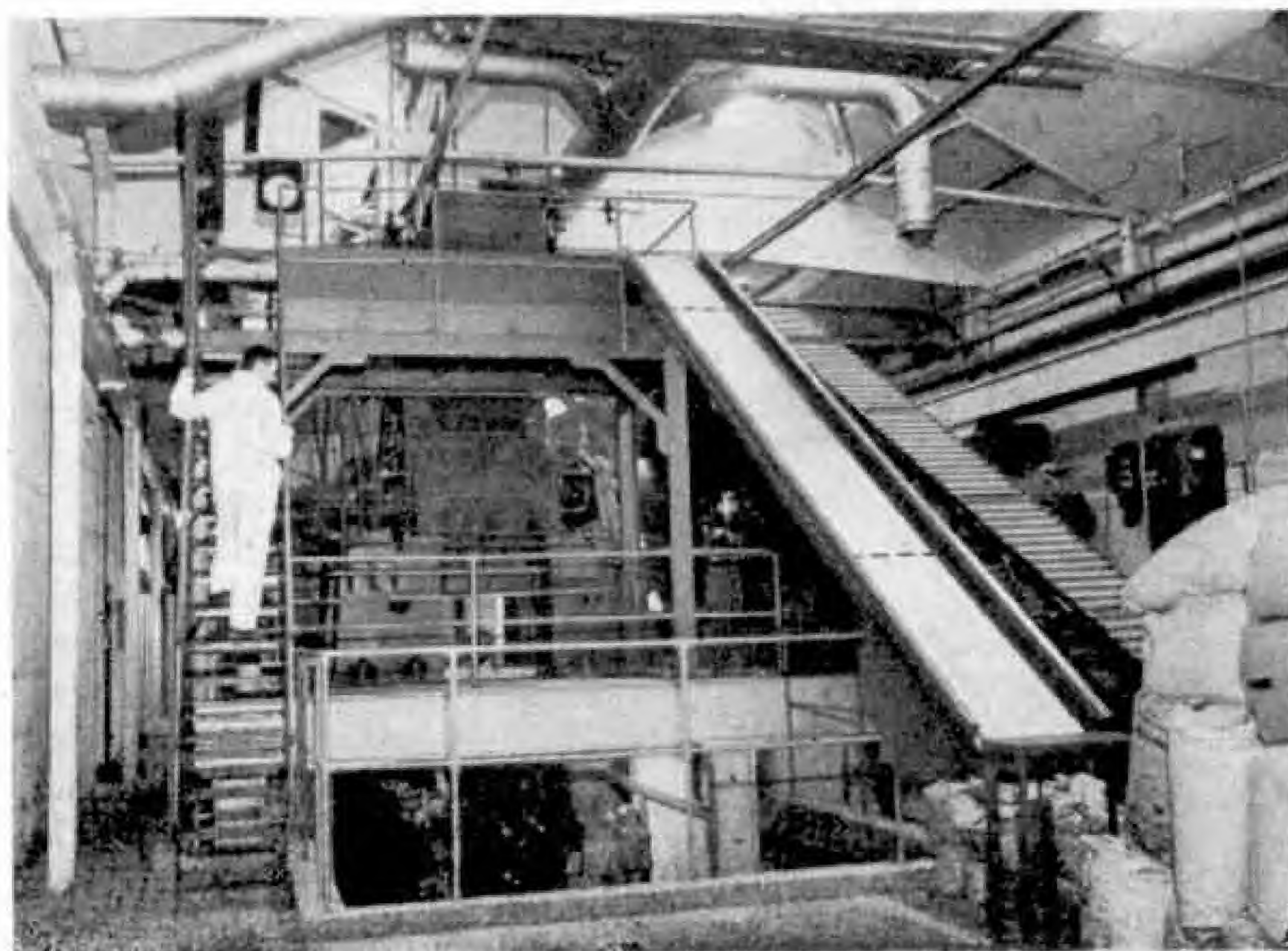
The repeaters will be energised by direct current supplied over each cable from the terminal stations, and there will be about two thousand volts between the central conductor and the sea at the ends of the long sections. They are so constructed that they should not require attention for at least twenty years—a most desirable safeguard, as the cost of locating and repairing a broken cable is very high.

For the 360 miles across the shallower waters of Fortune Bay, and overland to Sydney Mines, Nova Scotia, the British type of repeater will be used. This is nine feet long with an outside diameter of

10½ inches, looking rather like an oxygen cylinder. Owing to its diameter and rigidity this repeater cannot pass round the normal ship's gear and is therefore more difficult to lay.

The advantage of the British repeaters is that they can boost speech in both directions, whereas the American variety, being smaller, can only magnify sound in one direction. This is the reason why twin cables are to be laid, so that messages can be passed in either direction.

Most of the cable for the transatlantic crossing is being made in Britain by Submarine Cables Limited at Erith in Kent. The main factory of this firm is at Greenwich, but because it was unable to handle the £5,000,000 Atlantic telephone cable contract without disrupting its existing manufacturing programme, a new site had to be made at Erith. This factory, on a 5-acre site, opened by the Postmaster General, Lord De La Warr, has a total floor area of about



Polythene, a tough and durable plastic, is used in making the transatlantic telephone cable, and here is the mixing plant that prepares the material. Illustrations on this page by courtesy of Submarine Cables Ltd.



150,000 square feet, and as it is on the banks of the Thames, the manufactured cable can readily be transferred into the cable ship *Monarch*. A part of the bed of the Thames is being moved from Erith and taken out to sea to make it possible for the *Monarch* to berth alongside to load the cable.

More than 200 technicians and operatives are engaged at Erith on the production of the two cables, which will include the use of 2,700 tons of copper, 1,400 tons of polythene—the tough, durable, plastic material discovered by the Imperial Chemical Industries Limited in 1933—11,000 tons of steel wire, 1,800 tons of jute yarn and 2,400,000 yards of cotton cloth. Each cable is being manufactured to a much higher degree of precision than normally, as even small irregularities in the electrical characteristics of the 2,000 mile cable will upset the fine balance that must be maintained between repeater gain and cable loss.

The whole process of manufacture is automatic. The central copper conductor of the co-axial system passes through a machine that gives it an insulating coating of polythene. Copper taping machines then apply a layer of six copper tapes and the binding copper tape, which forms the outer conductor of the co-axial system. This is followed by a binding tape and a jute serving, which forms a bedding for the subsequent armouring wires. Armouring machines then apply a further covering of twenty-four steel wires and two more layers of jute, the outer layer being impregnated with tar. These operations should ensure that the cable will stand up to the wear and tear of a life beneath the ocean waves.

From the armouring machines the

completed cable is hauled along an overhead gantry, and is then coiled in storage tanks in the adjoining tank house. Each of the twelve storage tanks can hold about 185 nautical miles of deep-sea cable, and there is enough space for the storage of the repeaters, which will be spliced into the cable during manufacture. Actual laying began in June, when H.M.T.S. *Monarch* left Clarenville to lay 217 miles of cable

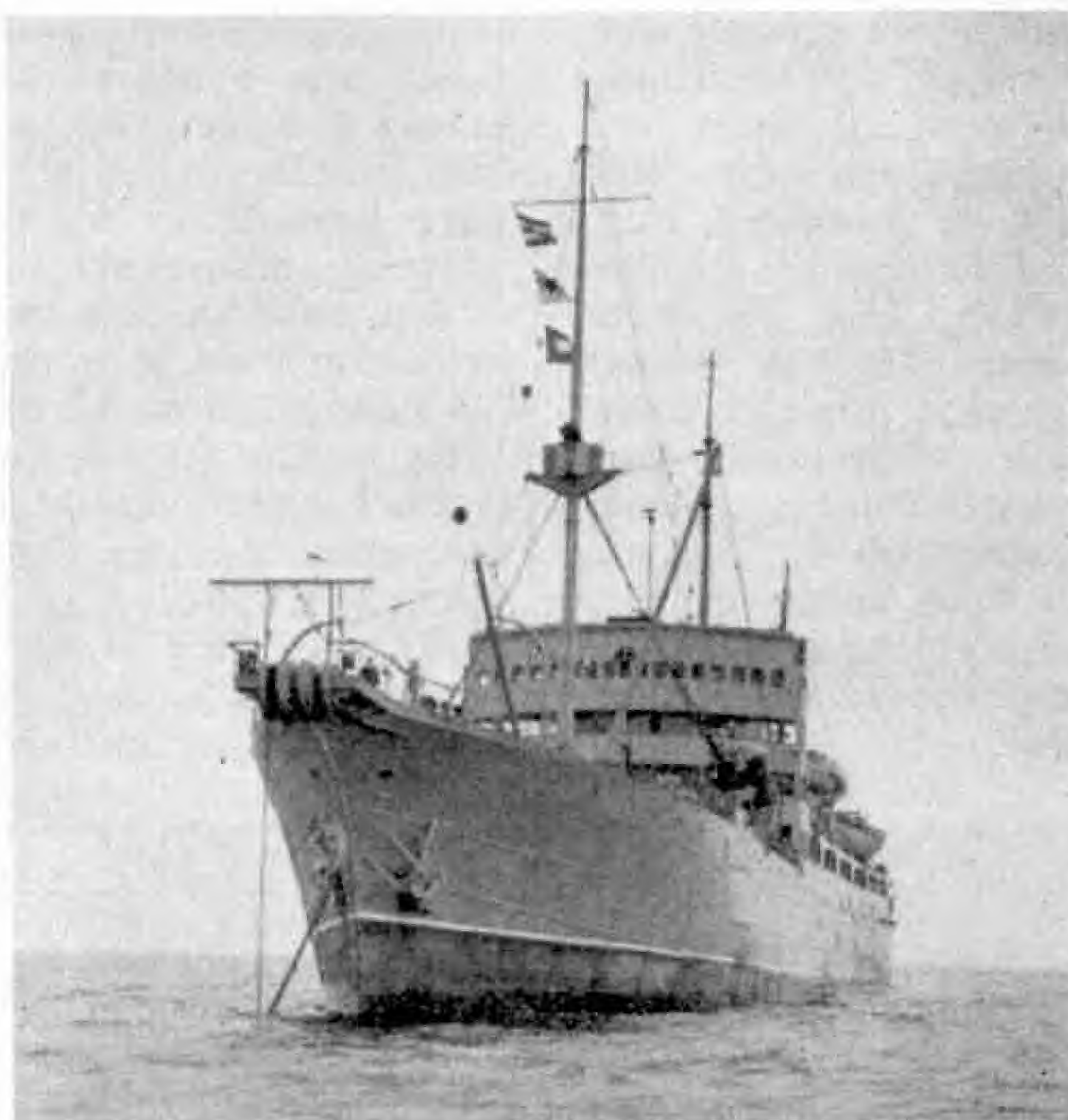
before returning to Great Britain for further operations.

Thirty-six simultaneous messages can be sent through the twin cables, when laid, and this is possible by means of the co-axial cable. Each individual call enters a transmitter and is allocated its own wavelength. The cable wire can be regarded as a band divided into several hundred separate channels, each one capable of accepting only the message directed into it.

Because of the distance, however, no more than 36 will be handled at a time.

At the receiving end, radio valves pick up the appropriate message just as a wireless set is tuned to receive the one station it is desired to hear. At Clarenville, a single cable will take over these messages and convey them through the waters of Fortune Bay, to the mainland of Canada at Sydney Mines, Nova Scotia. There the telephone calls will leave the cable for re-transmission by micro-wave radio relay to Montreal or New York. The whole scheme will cost £12,500,000.

In addition to a vastly improved telephone service between Britain and North America, it will be possible to provide a connection, through London, between incoming calls from a European country and the transatlantic line. Cable engineers are now looking forward to the time when they can send television pictures along the bed of the Atlantic.



H.M.T.S. "Monarch" on one of her previous cable laying trips. She is seen anchored 25 miles off the Danish coast while the main cable across the North Sea she has laid is joined to the shore end. Photograph by courtesy of H.M. Postmaster General.



# Fairground in Miniature

By David Peters

MR. NEVILLE RAINSLEY, of Oxford, has been model making for a long number of years, for his own enjoyment and also as a professional with one or two of the British film studios. He himself was on the stage as a young man, and anything to do with showmanship of all kinds has always been a great delight to him. His father was a craftsman in jewellery, and from him, no doubt, he inherited his gift for working with tiny tools, but his own artistic sense is obvious in the many drawings and paintings that line the walls of his Oxford home. Portraits and landscapes in oils and watercolours, a black and white line drawing of a Roman Charioteer which had been hung in the Academy, and little watercolour miniatures all speak not only of much solid hard work but also of his versatility.

several of the films that appeared in the '20s and '30s. He once constructed a fine model of the *Titanic*, and on his mantelpiece is a little horse and cart with four roistering passengers that appeared in a faked set—a snow-covered village—in the film *Under the Greenwood Tree*. Incidentally, while at Elstree he also took part himself in many films in roles of varying importance.

Rainsley models soon attracted wide attention, and he is proud of the fact that by Royal Command he was asked to make some models for the Queen's Doll's House. In his big attic studio he keeps many of his treasured models, some of which are illustrated here.

Mr. Rainsley is an expert observer of fairground life, and it is largely to this sphere that he has devoted the countless

hours needed to make his detailed models.

Among these is one that he calls "the smallest show on earth". It is a tiny stage on which he has mounted a collection of microscopic working models made of gold, silver, ivory and paper. Among them are a tiny train less than an inch in length, a minute ship, a submarine, an airship and a motor car. The last named is quite small compared with an ordinary housefly! On the village green that forms part of the miniature landscape there is a



One of the fairground models made by N. Rainsley, Oxford, is this miniature bioscope show. This was the forerunner of the modern picture house, and was popular about 50 years ago.

In his work for the film studios he learned to put his abilities to great use. Although he has not done this type of work for a number of years, some older readers will no doubt have seen some of his work without realising that it was his, or even that they were seeing working models, in

tiny old-time village fair, with an exceedingly small merry-go-round, complete with cockerels and ostriches.

An indication of the size of these Lilliputian creatures is shown by the fact that one day, while he was making the cockerels for the merry-go-round, he lost



one. He hunted for it high and low and was about to start on another when he found the missing one under his thumbnail.

In his time, too, Mr. Rainsley has been an inn sign artist, and while working in the surrounding countryside has had ample opportunities to study in detail the machines so often seen on village fairgrounds.

A fine scenic railway he has constructed, for instance, is a model 20 in. in diameter representing a type of roundabout that was a feature of the fairground about 40 years ago. The prototypes were all steam-driven by a centre engine, and so the model has a true-to-type centre engine itself. It has also an authentic Gavioli organ, pay-box, and eight differently carved cars representing animals, birds, mermaids and clowns.

Mr. Rainsley has used a 12-volt windscreen wiper motor to power the model, as small model motors were unsuitable or under-powered. The whole thing was illuminated by 36 miniature electric arc lamps. It took three years to make, which is not surprising when we learn that it is hand-carved throughout. It is decorated in oil colours to represent wild animal and jungle scenes. Some years ago it appeared in the film *Widdicombe Fair*.

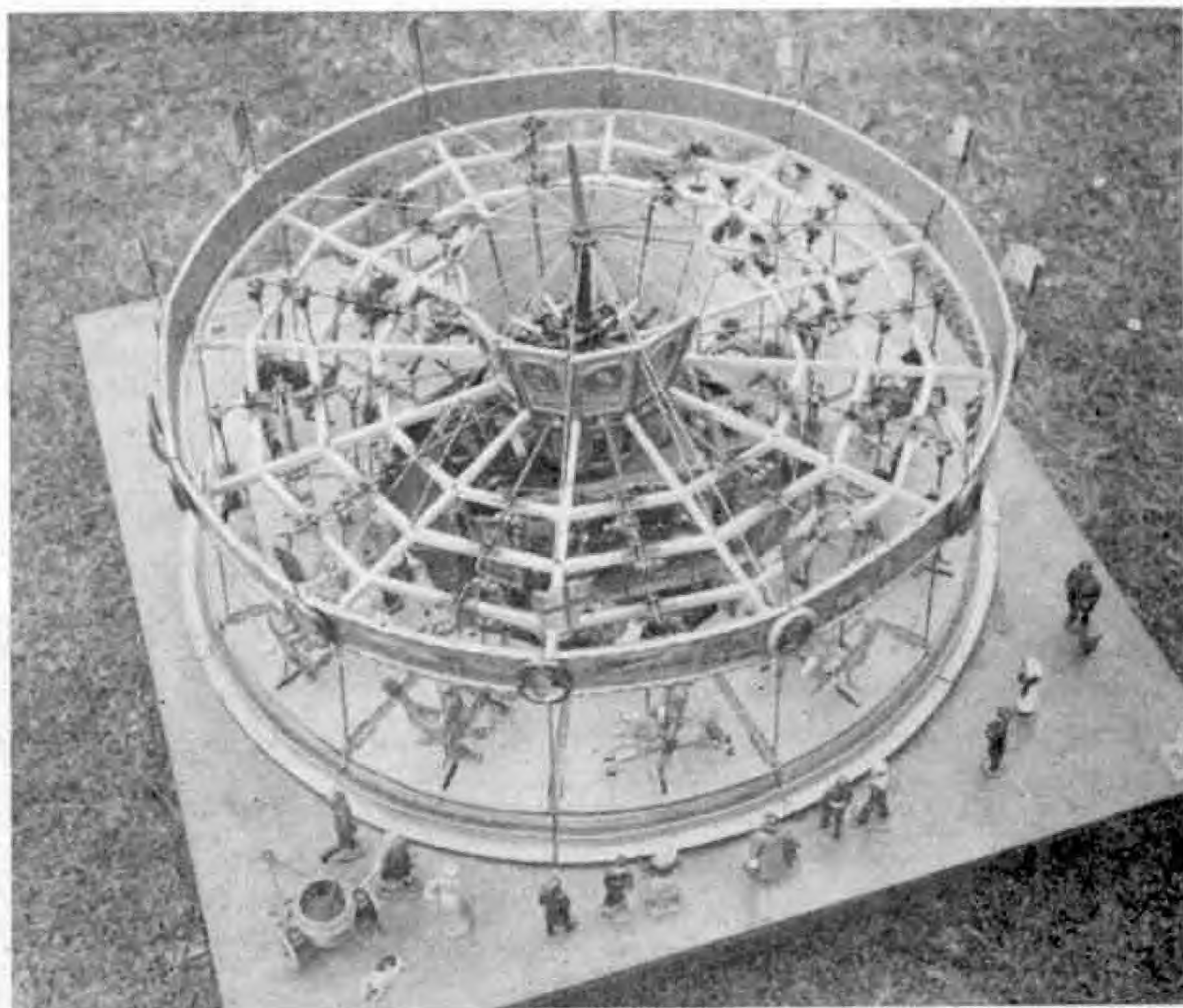
The illustration on this page shows some of the intricate work necessary in a model of this kind. The "tilt" has been removed to show the gearing, and the cranked rods, of a three-abreast 12-section type of machine called The Gallopers. All the 36 horses, cockerels and ostriches are hand carved, and the model is an exact replica of this popular type of roundabout, which is still much in use today.

The centre truck with engine is mounted on road wheels for travelling, and so is the three figure organ. The steam engine can be driven by compressed air.

This model also is 20 in. in diameter, and can be completely dismantled into about 140 separate parts. Mr. Rainsley took four years over making it. It is driven by a 12-volt worm drive windscreen wiper motor suitably geared with Meccano parts

to obtain the correct speed. The rounding boards are painted in oils representing the usual jungle scenes. The Gallopers starred in the film *Stop the Roundabout!*

The bioscope show, seen opposite, is 22 in. in width at the front and 20 in. at the back. It reproduces a type of show to be seen on fairgrounds around the year



The tilt has been removed from this model of a roundabout to show the gearing that causes the animals to rise and fall.

1905. In portable exhibitions such as these, films or "living pictures" were shown to the public for the very first time, and from such humble beginnings we derive our *Astorias* and *Odeons*, and the mighty industry of which they are the outward signs. The traction engine shown built in to the right of the model was used to haul the show from fair to fair, and to provide power for the electric light and the organ motor. The whole show took 2½ years to make.

These little shows in miniature are all peopled by small figures which add much to the liveliness of the scene. Some of them are shop models, but many Mr. Rainsley has moulded and cast himself.

With all the models working, and authentic fairground music being played on gramophone records, Mr. Rainsley's studio becomes a microcosm of fairground life. Understandably the models are very much in demand for exhibitions, garden fetes, and shows of all kinds, and their popularity is an adequate tribute to the years of careful work their designer and builder has lavished upon them.



# Railway Notes

By R. A. H. Weight

## Some Fine Runs Summarised

The very fast 80-minute timing for the 82½ miles between Euston and the Rugby stop by the *Midday Scot* was improved upon last spring with a heavy 14-coach train weighing about 475 tons full when 4-6-2 No. 46248, *City of Leeds*, on the usual Crewe working, was driven hard. From passing Tring, the summit of the long gradual rise out of London, at 62 m.p.h. to stopping at Rugby, 51 miles were covered in 43 min. Speed most of the way along that stretch remained between 72 and 80 m.p.h., giving an arrival just over 1 min. before time. This represented a

*Newport Castle* heading the lighter *Pembroke Coast Express* was closely in front of us as far as Wootton Bassett, but ran very fast after Slough so giving us almost a clear road.

Two other Castles, *Earl of Radnor* and *St. Fagan's Castle* respectively, did well over the pretty north to west main line between Shrewsbury and Hereford, which is steeply graded in parts. The former engine took a heavy, 14-coach, 470-ton express southbound. In the opposite direction the second engine hauling 13 vehicles, three of them lighter vans, gained over 8 min., running into Shrewsbury well ahead of the advertised schedule. Yet another, No. 7023, *Penrice Castle*, gained 10 min. on the up *Pembroke Coast* after a late start from Newport of 13 min. It covered 77½ miles from passing Swindon to stopping at Paddington in just over 68 min., with a 9-coach train weighing about 320 tons in all.

While on trial with W.R. expresses and enginemmen, L.M.R. Pacific No. 46237, *City of Bristol*, working just then from Paddington to Wolverhampton and back, left the last southbound stop at Banbury 9 min. late and ran into Paddington just before time on a 11-coach Birkenhead express, which has a fairly liberal final timing.

## New Locomotives placed in Service

The sheds to which new engines enumerated have been allocated are given whenever

A pleasant Southern scene showing an Isle of Wight Boat Train at Lymington Pier headed by 30104, a Drummond 0-4-4 tank. This was an entry in an "M.M." photographic competition by W. E. Dickinson, Leicester.



similar performance, though with much heavier load, to the one I recorded and reported in these notes last September by rebuilt Scot 4-6-0, *Queen's Westminster Rifleman*, hauling a 10-coach Birmingham express. Along the next stage to the Crewe stop *City of Leeds* went on to gain about 5 min. nett, allowing for track repair and signal slowings, though the actual time was 1½ min. more than the 77 min. allowance for 75½ miles.

In the opposite direction, the 7P rebuilt Patriot 4-6-0, No. 45523, *Bangor*, with a London Inspector, driver and fireman on the footplate, ran a 13-coach Liverpool and Manchester express from Crewe to Watford, 140½ miles in 142½ min., arriving comfortably to time after a late start of 4 min. The average was thus nearly 60 m.p.h. on a steady run with every signal at clear, and with moderate slacks past Stafford and Rugby as usual, and near Atherstone on account of engineering work. The layout and moderate grading of the West Coast main line between Euston and Crewe favour fast schedules.

In a full 10-coach special train we were taken without stop from Paddington to Bristol in 122½ min. in spite of six slowings of moderate character as well as a crawl over a bridge under reconstruction just west of Swindon. Nett time was only about 111 mins. for 118½ miles. The engine was Castle 4-6-0 No. 7017, *G. J. Churchward*, which touched 86 m.p.h. down Dauntsey bank and ran very well elsewhere.

announced at the time of writing, as follows: class 5 4-6-0s, 73075-6, 66A, Polmadie, Glasgow; 73077, 65A, Eastfield, Glasgow; others are in hand at Derby. Class 4 2-6-0s, 76053-5, 75B, Redhill, Surrey. Class 9 2-10-0s with Franco-Crosti boiler, 92020-6, 15A, Wellingborough. Class 4 2-6-4Ts, 80105, 33A, Plaistow; 80116-8, 50G, Whitby. Class 3 2-6-2Ts, 82035-6, 88C, Barry, also Nos. 82039-40; 82037, 87K, Swansea, Victoria; 82038, 83A, Newton Abbot. W.R. 0-6-0Ts: 1665-6, 87F, Llanelli; 1667, 85C, Hereford; 1668, 83B, Taunton; 1669, not allocated.

Diesel-electric shunting locomotives numbered 13111-16 have been allocated to 84G, Shrewsbury; Nos. 13140-1, 53C, Hull, Alexandra Dock; 13220-1, 75C, Norwood S.R.

## Highlights of the Summer Time Tables

A number of accelerations and enterprises figure in the British time tables now current. The usual extensive programme of coastal and week-end holiday trains, also of special and cross-country fast ordinary or excursion services is in operation until September, together with many extra long-distance expresses during the busy season. Compared with last summer, there are 58 instead of 48 start-to-stop runs on ordinary weekdays timed at 60 m.p.h. or over; 64 main line trains have been quickened by 10 to 81 mins.

The *Flying Scotsman* is much quicker, having a 7-hr. schedule in each direction between London, King's Cross and Edinburgh, Waverley, calling only at Newcastle. It is preceded as it was last year by the very fast



B.R. Standard class 5 4-6-0 No. 73013 leaving Bristol with a train for Derby and York. Photograph by A. Phipps, Bristol.

non-stop *Elizabethan*, allowed only 6½ hrs. with a rather lighter train. The *Royal Scot* is again a 7½ hr. express in each direction between Euston and Glasgow, making a locomotive service stop outside Carlisle. The *Ulster Express*, London-Northern Ireland service via Heysham, has been quickened.

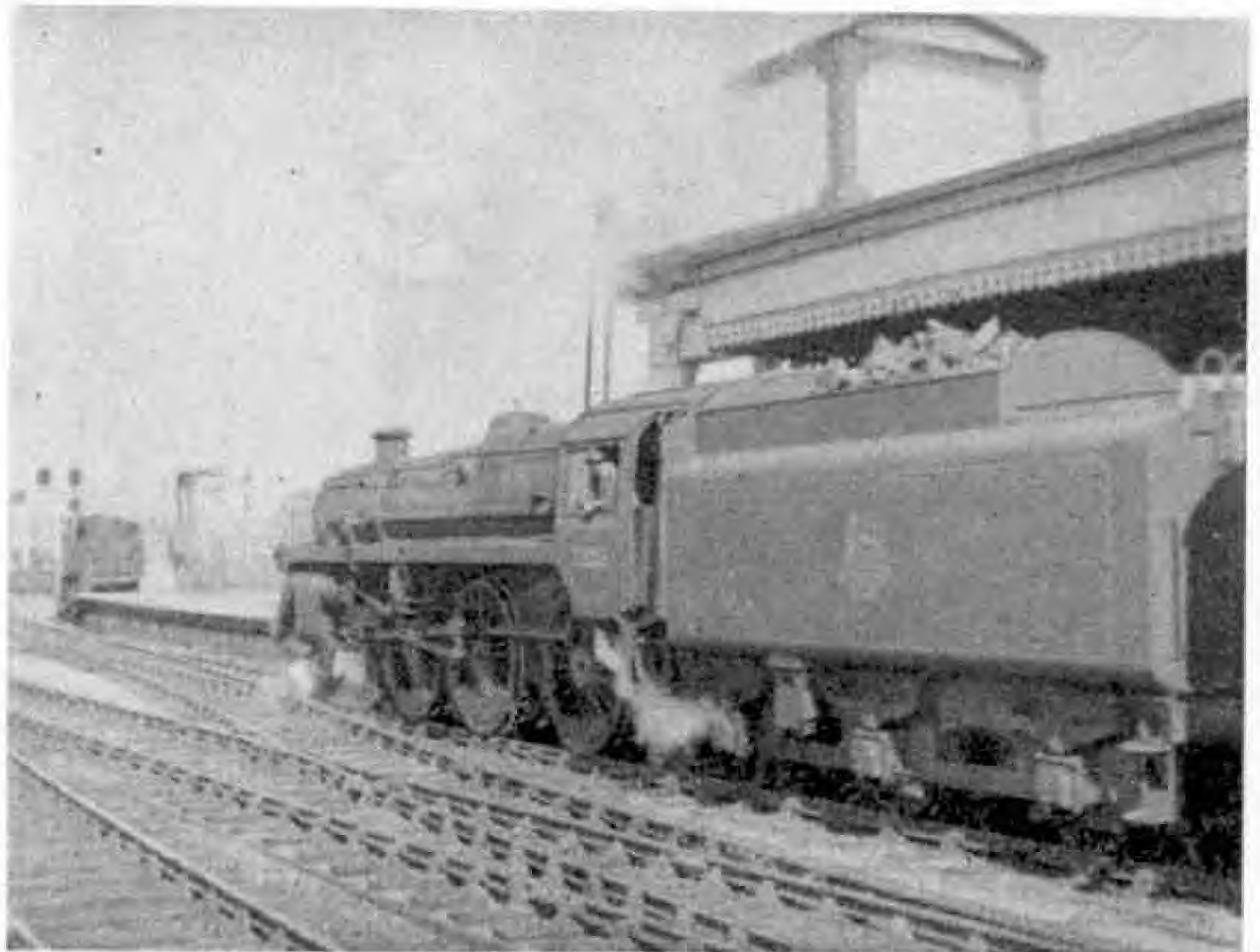
The Western Region has introduced a Paddington-South Wales Pullman car express serving Newport, Cardiff, Port Talbot, Swansea. The westbound *Pembroke Coast Express* is accelerated to provide decidedly the fastest timing from Paddington to Newport, leaving at 10.55 a.m. and is timed to cover the 133½ miles in 128 min. to arrive at 1.3 p.m. A new evening "flyer" from Oxford to Paddington, runs the 63½ miles in 60 min. and the timing of the *Cornish Riviera Express* is reduced from 4½ to 4 hours for the Paddington-Plymouth run, together with other improvements.

Local or outer suburban services at regular intervals during the daytime have been introduced within the Paddington-Reading area, also by the Southern on the Victoria-East Grinstead-Tunbridge Wells routes, which enjoy much improved steam train facilities, with connections to Three Bridges and elsewhere. At busy times, 10-car electric sets run on the Charing Cross-Dartford loop line.

There is no *Devon Belle* Waterloo-Ilfracombe Pullman holiday service this year; a restaurant car train composed of ordinary stock replaces it on Saturdays. The number of mile-a-minute expresses to and from Euston has been increased with several booked to maintain a rather faster average than that south of Crewe. Generally these quickest bookings apply from Monday to Friday only.

#### Western Tidings

Following much testing on the stationary Plant in Swindon Works, the B.R. 4-6-2 No. 71000, *Duke of Gloucester*, made a number of trial runs with loads up to 20 bogie coaches including dynamometer car, from Swindon to Newbury, or Westbury and back via Reading west curve, afterwards returning to the L.M.R. County 4-6-0s have been working to Paddington

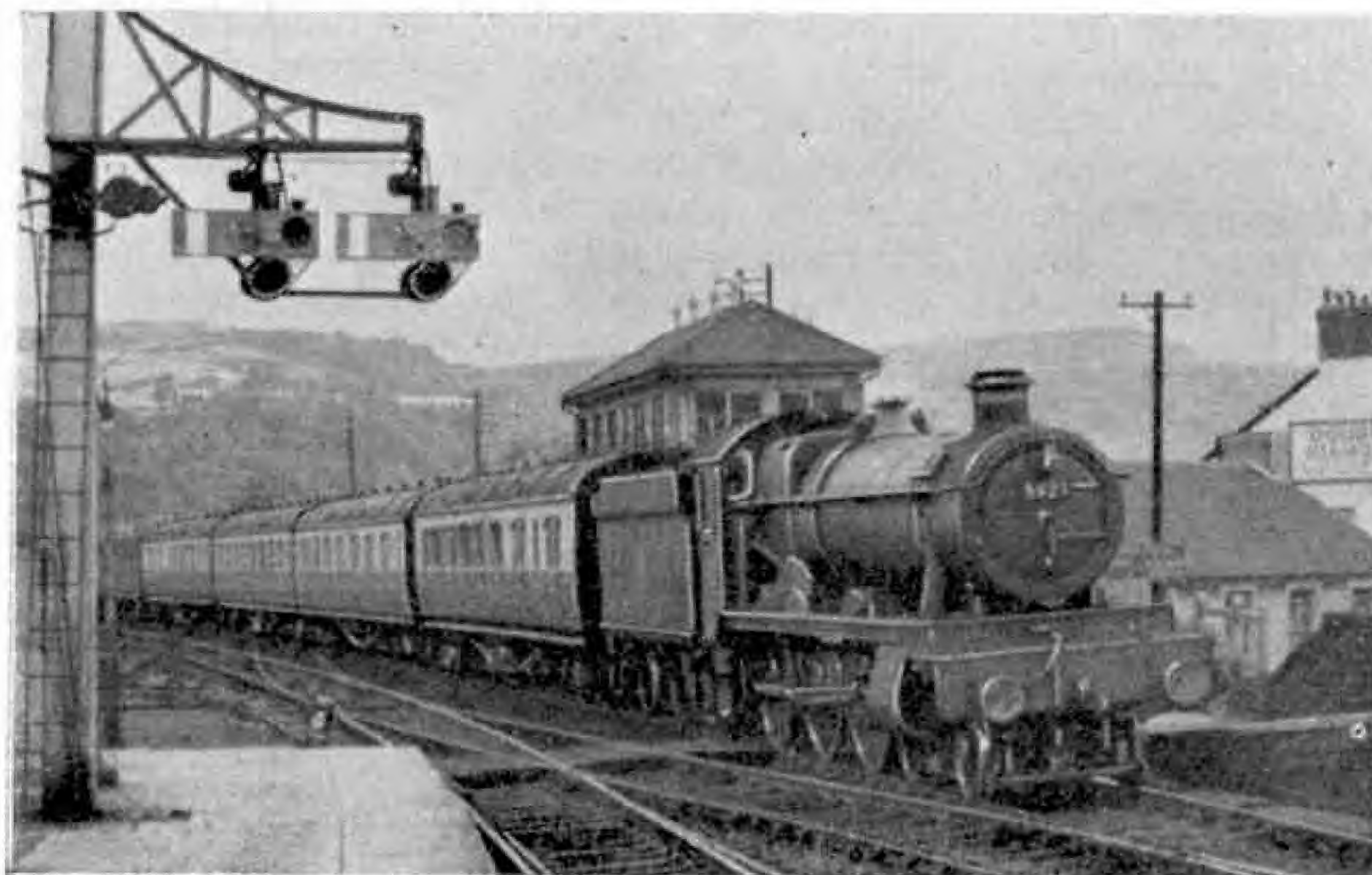


on the Shrewsbury turn with the *Cambrian Coast Express*; No. 1009, *County of Carmarthen*, has been the subject of steaming tests and trials with double chimney, while allocated to the main Bristol shed. No. 7025, *Sudeley Castle*, hauled a through restaurant-car special from London to Birkenhead, avoiding Chester station, in connection with the Grand National race meeting last spring.

Oxford W.R. station accommodates a few L.M.R. passenger trains also a considerable amount of through main line passenger and freight traffic, much being of a cross-country character as well as local, though its equipment of platforms and tracks is far from liberal. On an ordinary Saturday in the winter time-table period, in addition to Castles, Halls and other usual W.R. locomotives, the following selection of engines was observed within a short time: E.R. D16/3 4-4-0, 62585 (lately withdrawn) from Cambridge via L.M.R., B.R. class 4 4-6-0s, 75037-8; 2-8-0s No. 48265 (L.M. 8F), 90065, W.D., S.R. 30861, *Lord Anson* and 34044, *Woolacombe*. The last two, a 4-6-0 and 4-6-2 respectively, were off through Bournemouth expresses to the north that are hauled regularly over W.R. metals from Basingstoke to Oxford by S.R. engines. There was also a W.R. diesel railcar to add to the variety.

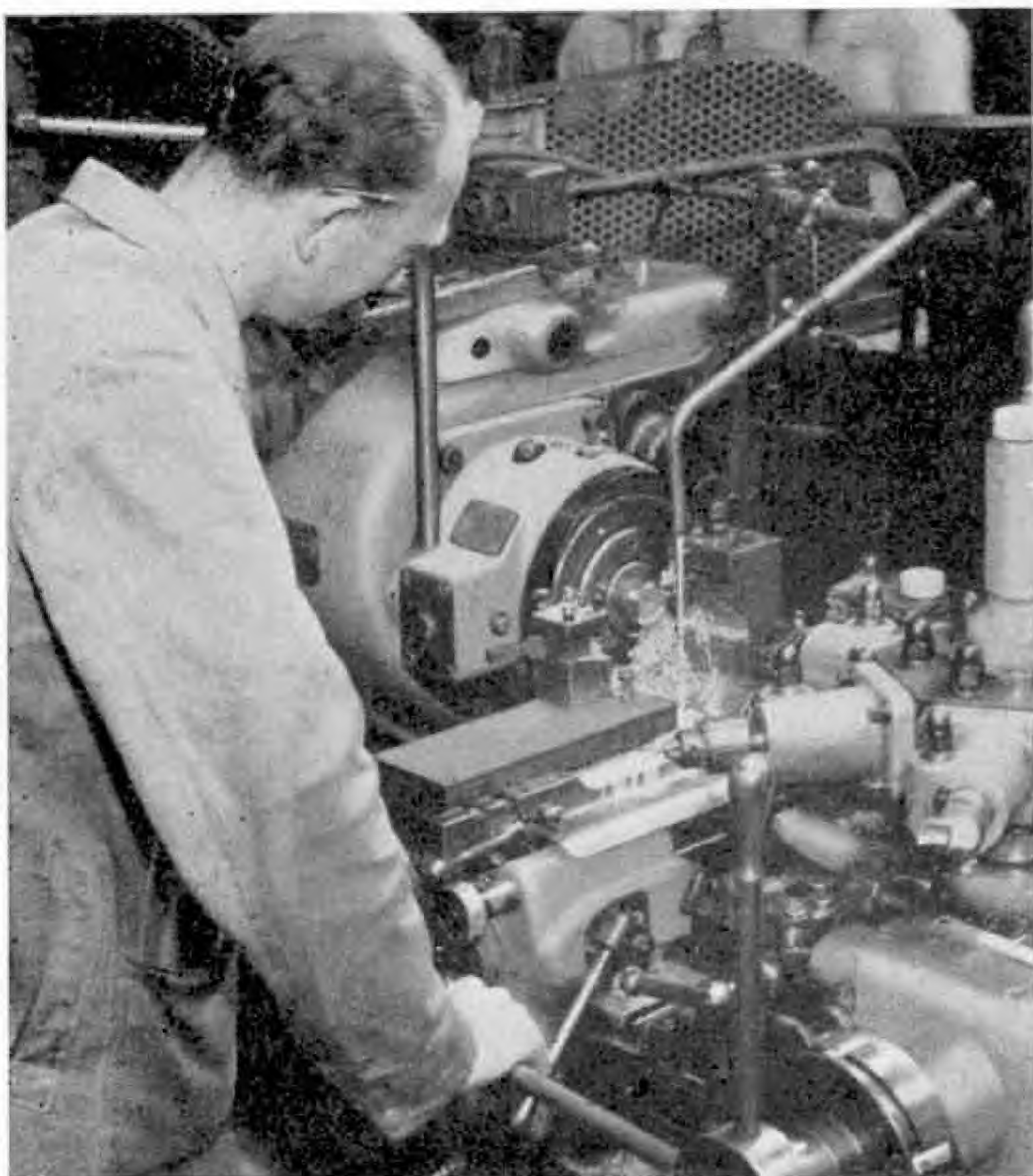
#### Railway Developments on the Continent

From a recent bulletin issued by the European Railways' Information Centre, known as C.I.C.E., Rome, I learn that a de-luxe electric express is operating in Italy, known as the *RM*, between Rome and Milan, all seats being reservable and supplementary fare payable. This flyer provides cloak room service, restaurant and bar, radio transmission, travelling interpreter (also carried on some other Italian expresses), newspaper and tobacco stall.



"Colston Hall" W.R. No. 5923 runs into Neath (General) Station at the head of a train from Swansea to Cardiff. Photograph by A. B. Thornton, Luton.





The  $1\frac{1}{2}$  in. Bevel Gears are blanked from brass rod on a capstan lathe. Part of the turret that carries the tools required is seen on the right of the picture. The operator has his left hand on the lever with which he opens or closes the collet on the headstock that keeps the brass rod rigid during turning.

I DO not need to tell you that every Meccano part and component is made in true engineering style. That is why Meccano is truly engineering in miniature. To make sure that it is, and that each part will stand up to continuous use in the construction of an indefinite number of models, followed by their dismantling, the most reliable and up-to-date engineering methods are used in its making.

Parts that particularly illustrate the care and skill used in making Meccano products are gear wheels, all of which are blanked and cut in exactly the same way as similar gear wheels used in full-size engineering production. As an excellent example of this I have chosen the production of the  $1\frac{1}{2}$ " Bevel Gear, Part

## Making Meccano Bevel Gears

By the Editor

No. 30c. One of my reasons for doing this is that it gives me an opportunity of introducing to you the capstan lathe, one of the most valued tools of the engineer.

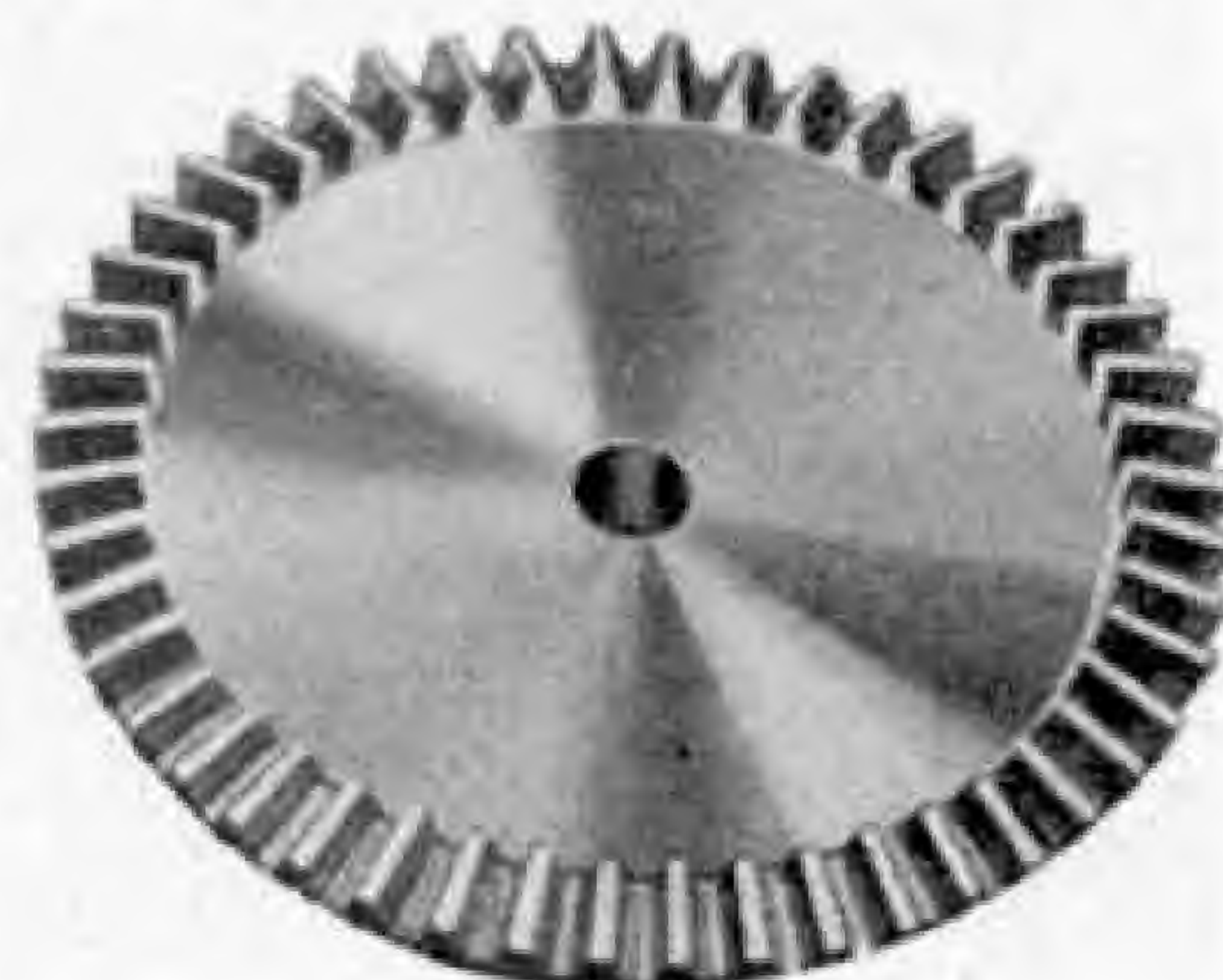
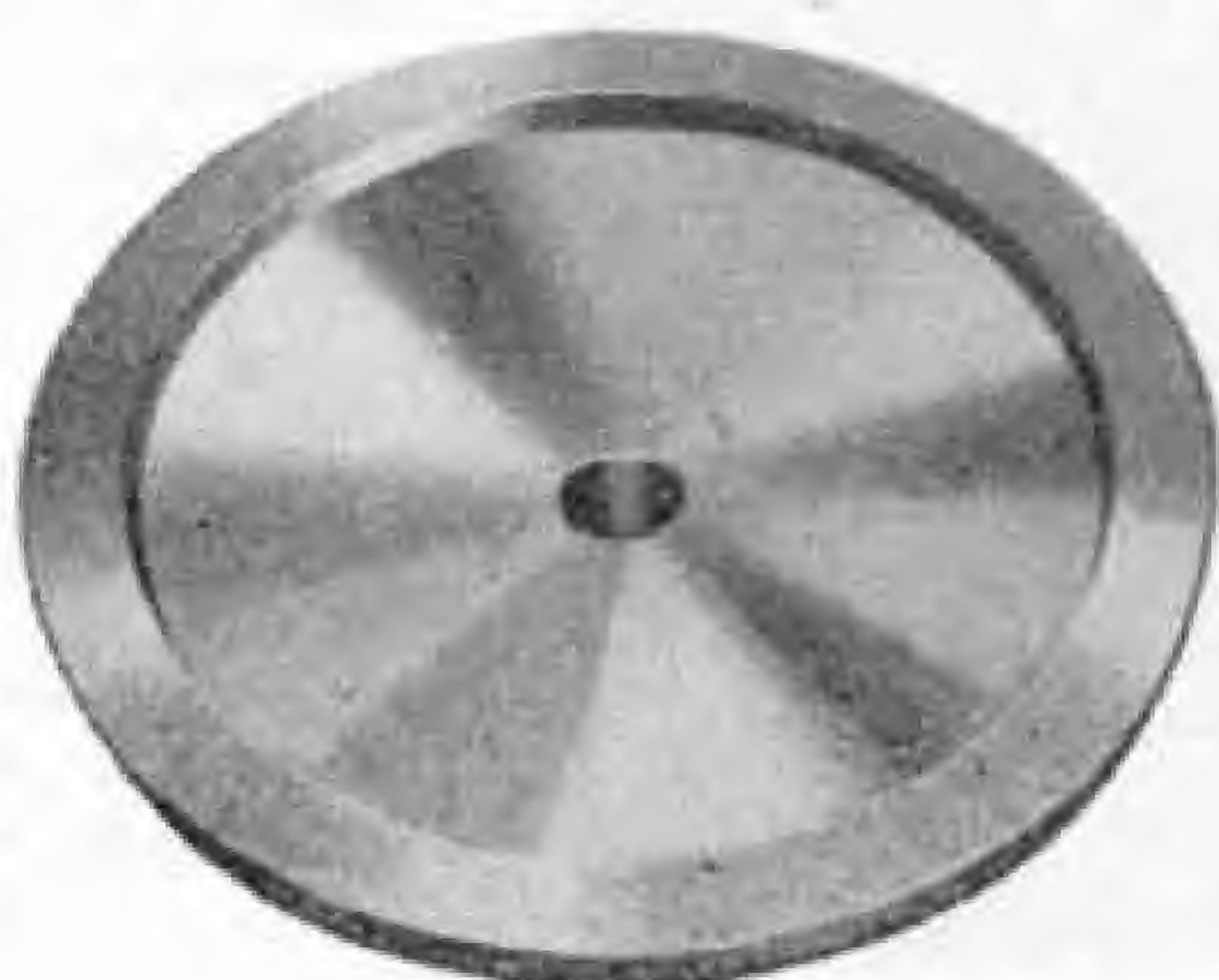
The part is made in stages. In the first of these the "blank" seen on the left in the picture at the foot of the page is made, in the second the teeth on the bevelled edge are cut and then follow finishing operations. Let us see first how the blank is made. It is in this stage of production that a capstan lathe is used.

The idea of a capstan lathe is quite simple. It is an engineer's lathe, designed for carrying out a series of operations to form a component, such as a blank for a bevel gear. This requires a succession of tools. What is called the turret on a capstan lathe is mounted on a slide which can

move forward or backward when the capstan wheel is turned. Appropriate tools are mounted in holes equidistant round the turret head and on the centre line of the headstock, which holds the workpiece. The turret head moves round one station each time the turret slide is moved to the extreme backward position, so bringing into position the next tool for use in the correct sequence of operations.

Now let us follow the making of the blanks for the Meccano Bevel Gear on a lathe of this kind. The metal used is brass, and the stock, as the engineer calls it, from which the blank is made takes the form of a round bar  $1\frac{9}{16}$  in. in diameter. This is fed into the lathe through the headstock, which by means of a collet in

The blank and finished Bevel Gear are shown here, and between them is the milling tool that cuts the teeth of the gear.





the nose end of the headstock holds the metal bar rigid when it is in the closed position. This you can see in the centre of the upper picture on the opposite page, which shows the blanks for 1½" Bevel Gears actually in production, and part of the turret head, with some of the tools mounted on it, can be seen on the right of the illustration.

The first step is to open the collet and then feed a sufficient length of the brass bar through the headstock. To limit the amount of metal fed forward to the correct amount, a stop consisting of a rod of metal with a flat end is used. This is the first tool mounted on the turret.

When the bar has been positioned in this way the collet is closed, the turret slide is then moved back to turn, or index as the engineer calls it, the turret head one station; this moves the stop round and presents the next tool to be used. This tool makes a small indentation in the exact centre of the end of the brass bar, which of course is rotating throughout these operations. The purpose of the indentation is to provide a guide for the drill that makes the central hole in the bevel gear.

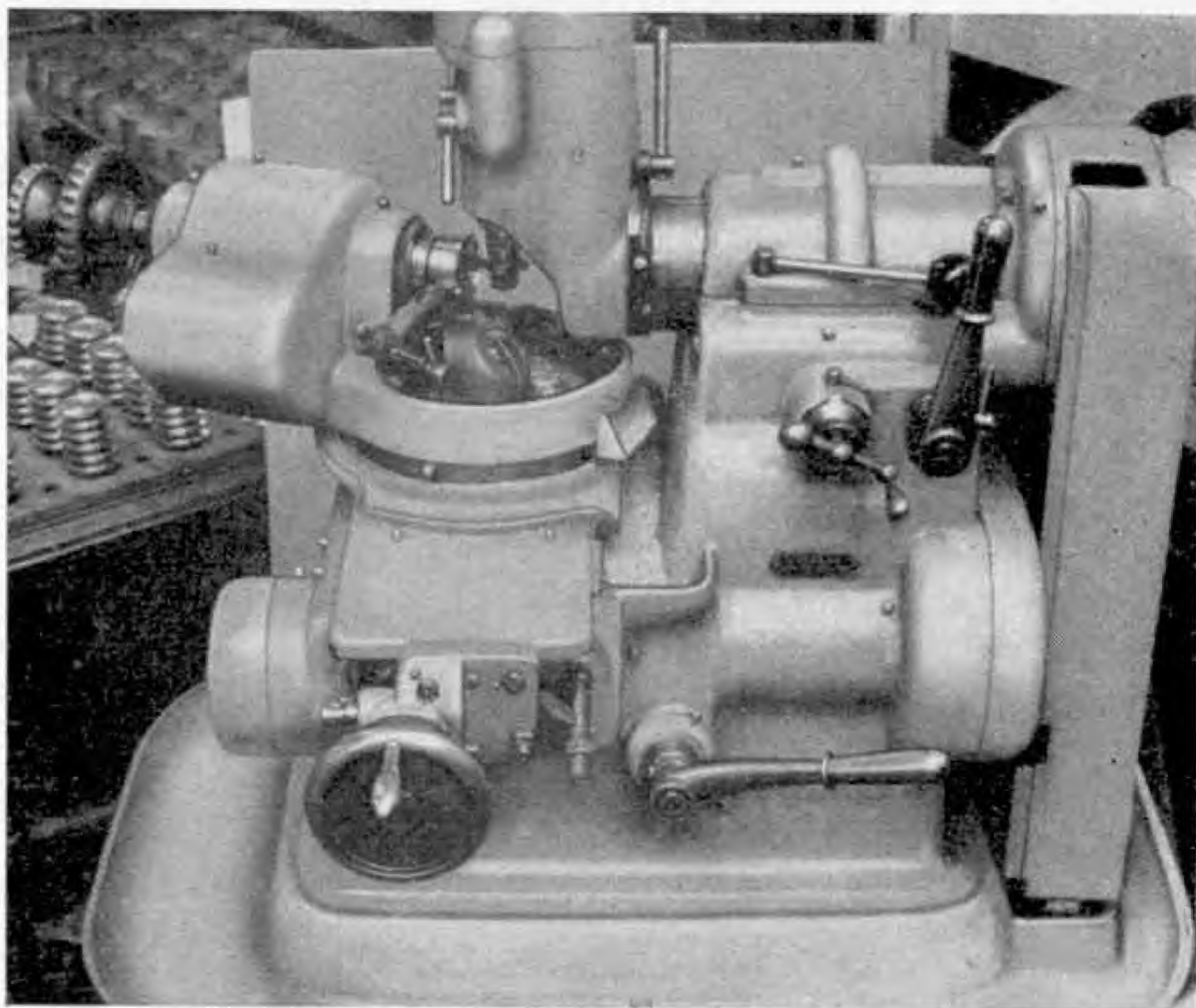
This drill is the next tool to be brought into position by the rotation of the turret. When it is in position it is fed into the brass bar, drilling a hole to a depth exactly sufficient for the making of one bevel gear. This is to ensure that when the metal is fed forward for the next gear blank, no portion of the previous drilled hole is left in the bar stock that might interfere with the correct centring of the blank to be made.

This operation is an example of the precision with which all work of this kind is carried on.

Now take a look at your bevel gear, or at the illustration of the blank to which I have already referred. You will see that the face, inside the ring of teeth, is recessed, and that the teeth themselves, since it is a bevel gear, are at an angle

to the face, with a reverse angle behind them. The cutting of the recess and the forming of the angled faces are the next tasks undertaken, the turret rotating to bring the necessary tools into position. The next operation is to cut away metal behind the bevel gear itself, so as to form its boss, and for this a tool, carried on a cross slide mounted in a tool holder, moves in from the front of the machine.

This completes the forming of the blank, and a further tool, mounted at the rear of the cross slide, now advances at a controlled rate to cut, or part it off, from



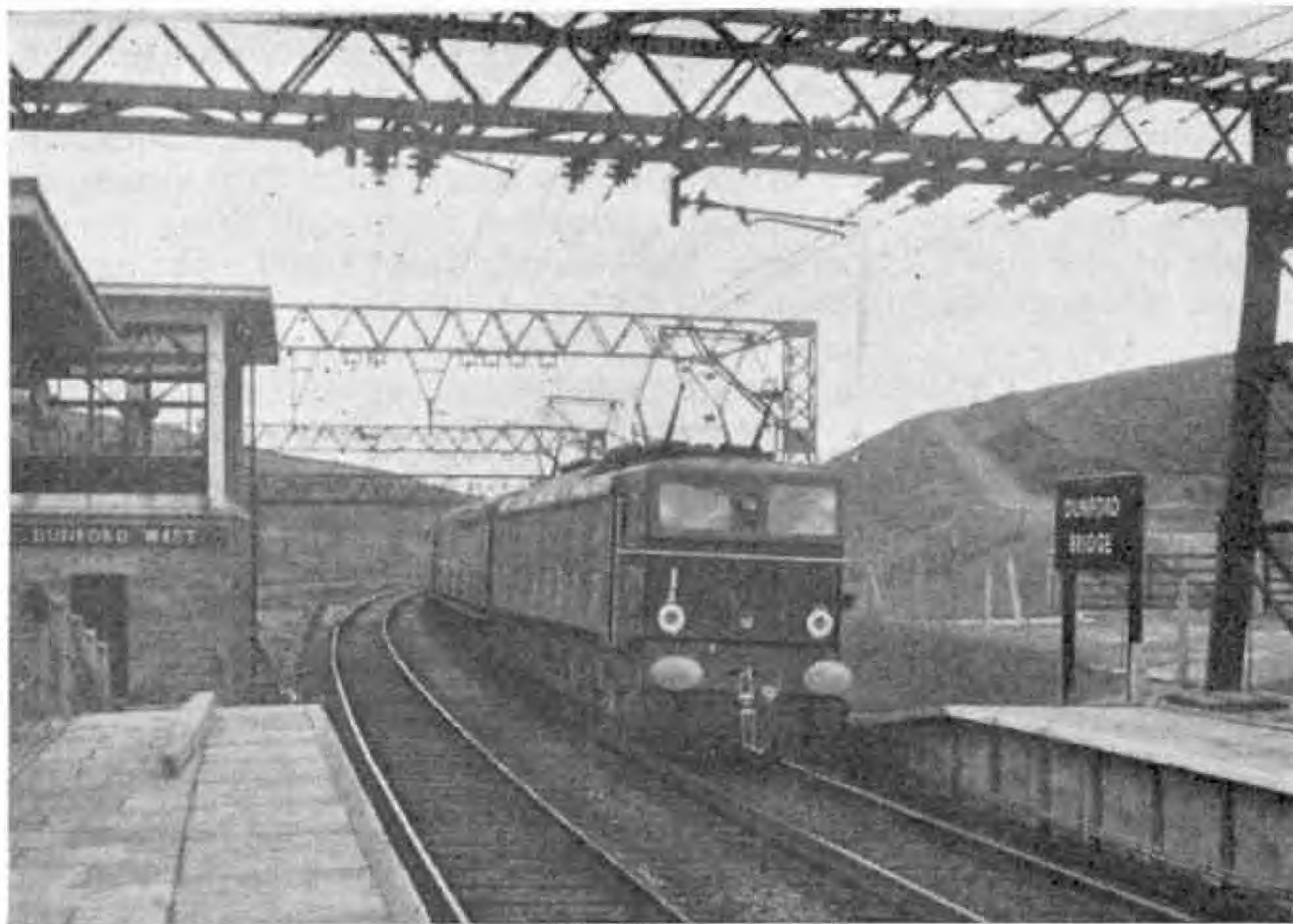
The machine on which the teeth of the Bevel Gears are cut.

the bar. The blank falls away and the whole process begins anew. The bar again advances up to the stop that is the first tool used, the new end is centred and the central hole drilled, and so on. The process is continuous and all the time a stream of coolant flows down over the workpiece to ease the task of the tools. The metal turned off of course accumulates as swarf, and is removed from time to time as required.

From the capstan lathe on which they are produced the blanks next pass to the gear-cutting machine, which is illustrated on this page. The unwanted metal is removed by a milling cutter, which you can see in the middle of the lower illustration on the opposite page. This is a carefully

(Continued on page 458)





A train from Sheffield to Manchester, headed by Co-Co locomotive No. 27003, at Dunford Bridge, about to enter the new Woodhead Tunnel. The illustrations to this article are from British Railways photographs.

# From Manchester to Sheffield

## Cab Trip in an Electric Locomotive

By the Editor

WHEN I walked up platform No. 2 at London Road station, Manchester, there was nothing about the train standing alongside to show that my journey to Sheffield would be out of the ordinary. But when I reached the outer end of the platform a difference immediately showed itself, for instead of the familiar locomotive and tender of the railway scene, with smoke and steam, there was a long black box-like electric locomotive, with pantographs on top of it, fore and aft, making contact with an overhead wire.

This was one of the electric locomotives that now haul both passenger and goods trains over the very difficult route of the former Great Central Railway between Manchester and Sheffield. It was No. 27002, one of the seven Co-Co locomotives in service on the line. This notation indicates that it has two six-wheeled bogies, each axle of which has a 450 h.p. motor slung on it. Most of the locomotives in service have two four-wheeled bogies, and are designated Bo-Bo. The first letter in this wheel notation indicates the number of axles, A for 1, B for 2 and so on. The second letter is added for each axle that has a motor of its own.

I climbed into the front cab of the locomotive, to be greeted by Tom Golborne, the motorman, and his assistant,

heartily when I suggested that he found his new locomotive much more comfortable than those on which he had spent most of his time during his railway career.

There was still some time before departure, so I dropped on to the platform again and walked back to the rear cab of the locomotive, which is exactly like the one I had just left. No turntables or runs round triangular tracks are necessary with these new electric locomotives. They can be driven equally well from either end, and reversing simply means going to the opposite end of the locomotive and placing the motorman's key into the lock that provides for the supply of current and brings the controls at that end into play.

I did not linger in the rear compartment. My purpose in entering it was to make my way through the locomotive back to the driving compartment, along a narrow corridor that runs along one side. One compartment contains the electrically-heated boiler used for providing steam for train heating. This is automatic in action, the water level in the boiler itself and the temperature both controlled by ingenious electrical devices, and if by chance, a remote possibility, anything does go wrong during a run, a blue warning light appears in front of the motorman. Another compartment contains

K. Brennan. The cab was roomy and comfortable, clean and well arranged, with seats for the crew from which they have a wonderful direct view of the track ahead of them, through large windows, equipped with wipers, that are in remarkable contrast with the small windows through which the enginemen of a steam locomotive look ahead past the fire-box and boiler; and Tom Golborne agreed



In the cab of No. 27004, one of the seven Co-Co locomotives in service on the electrified line between Manchester (London Road) and Sheffield (Victoria).

the many resistances required in providing working control. This is locked, and the act of unlocking and opening the door immediately cuts off current, thus preventing any possibility of accident to men working in this cabin if the necessity does arise.

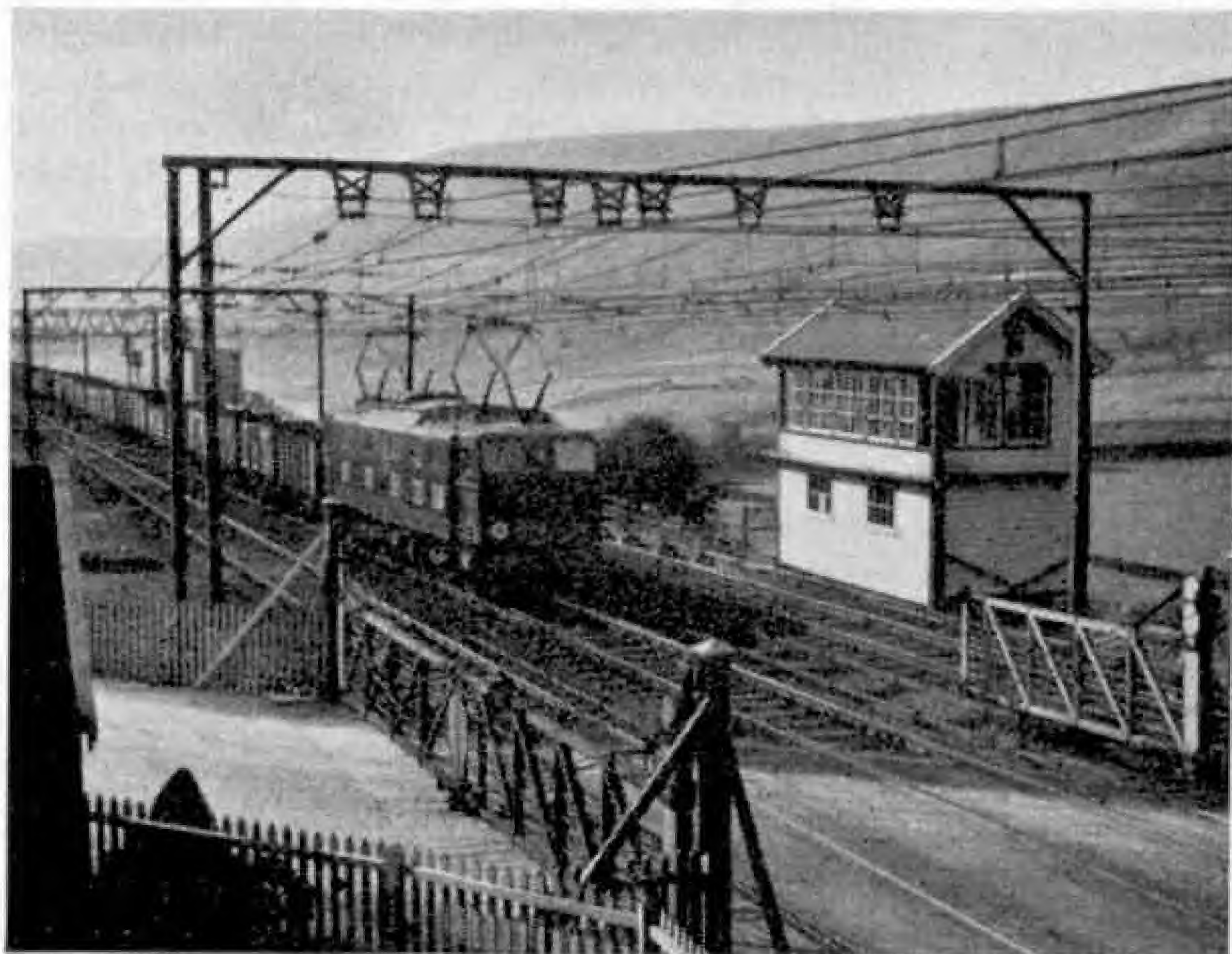
Back in the driving compartment, while waiting for the signal, I was able to have a good look around. The controls are fitted along the front, under the two windows, and the general layout suggests something more nearly approaching a motor car than a locomotive, with a suggestion also of an electric tram car, although the controls are more elaborate and there are many indicators for various purposes. The motorman's seat is on the left and in front of him is a panel in the middle of which is a speedometer. Below this are two light indicators, one for the line circuit and the other, which I have already mentioned, for the electric heater. A fault in the line circuit is shown up immediately by the appearance of a red light on the former, a blue light appearing on the latter showing a water heater fault.

Brake controls are on the driver's left, one for an air brake for the locomotive itself and the other for the vacuum brake for the train. Above the speedometer are meters, on the needles of which the engine-man keeps his eye, and to the right of this



are the various switches for the lights of the locomotive and for heaters. Between these, and just behind the controller handle and its quadrant, are three special switches for the operation of the pantograph through which current is collected from the 1,500 volt line overhead. One is for raising the pantograph and another for lowering it, while in between and slightly offset is one that is used for re-setting the pantograph, overload, "over-volt" and "no volt" relays when occasion arises.

Now came the moment for a start. The signal given, the motorman brought the control handle down along its quadrant, a notch or two at a time, and smoothly, easily and silently the train began to glide forward through the maze of lines out of the station. The line from London Road to Sheffield is a remarkable one. It climbs over the Pennines, and for the 21 miles to the summit, in the new Woodhead Tunnel, there is an almost continual rise, with gradients reaching 1 in 100 in places. Up these gradients the train ran easily, with the locomotive obviously completely master of its task. We gathered



The level crossing by Torside Signal Box, with an up goods train approaching. Torside Box is on the 1 in 117 climb to the western portal of Woodhead Tunnel, four miles away.



speed as the control handle was brought along its quadrant, through the 17 notches of the first section, then across a gap to the second section, and finally across a second gap to the final section.

These sections require a little explanation. Over the notches of the first the motors of the locomotive are in series, current passing through each of the six motors of this type of locomotive in turn. The torque of the motors is greatest in series, and trains are started from rest with this arrangement. As speed rises the motor combination is altered to "series-parallel", current still flowing in series through each of the two sets of three motors on the bogies of the locomotive, but with the sets themselves in parallel,

A coal train at Barnsley Junction, entering the main line from the Wath Branch. It is headed by one of the Bo-Bo electric locomotives, No. 26002.



and then into "parallel". As the motorman passes from series to series-parallel, or from the latter to full parallel working, he pauses for a moment in the gap between the two sets of notches, and at that moment the red warning light flashes momentarily.

The climb to Woodhead Tunnel is superb. Only a few miles out of Manchester we began to get glimpses of the hills ahead, and the further we went the more magnificent became the scenery. Over Mottram and Dinting Viaducts we ran easily, with the ground seeming an almost frighteningly long way below us. Through a gap in the hills on the left I caught sight of the soaring mast at Holme Moss, the B.B.C. television station, as we climbed higher, and it was impossible to miss the great reservoirs, at Longdendale, which supply Manchester with a proportion of its water. On the line we passed several coal trains from the Yorkshire coalfields, hauled by Bo-Bo locomotives, one of which was No. 26020, which had been on display at the 1951 Festival of Britain Exhibition.

All this time I was anticipating the run through the new Woodhead Tunnel, specially designed for the passage of trains hauled by electric locomotives. This is in

striking contrast to the old double tunnel on its left, through which the steam trains passed. As it accommodates two tracks, and provides sufficient height to allow for the overhead wiring, it is of course on a much larger scale and it presents a far more inviting appearance. Its interior is almost fantastic. The train did not plunge into darkness, for on both sides, high up on the walls, are bright lamps extending as far as I could see, their light reflected from the bright rails of the track ahead. There was no grime, the walls showing up greyish

white, and instead of an atmosphere laden with soot and fumes there was fresh air, with a clear view ahead for the motormen.

It was easy to realise from the rising parallel lines of brilliant lights in the tunnel that we were still climbing—the gradient in the first section of the new tunnel is 1 in 129—but ahead at one point the lights seemed to dip. This was an illusion due to the climb, for on reaching the section where the lights seemed to fall away I found that there the track was almost level. We had passed the summit, and actually there was a very small fall ahead to the outlet, at Dunford Bridge, a horseshoe-shaped opening clearly marked out in brilliant sunshine and rapidly growing larger as we sped towards it.

We were now beginning the drop down to Sheffield, and one of the most remarkable features of the new transport came into evidence. This was the braking system, in which the motors that had already carried us up the steep rise from Manchester were now made to work in

(Continued on page 458)





Guildford's 16th century grammar school, still in use, contains a collection of old chained books.

THE great public schools of England, with their long histories and traditions, are well-known, yet many smaller seats of learning up and down the countryside have engaging stories. Not all these old schools are attended by scholars to-day, yet the buildings are entertaining historical treasures and are often worth inspecting.

Just outside the churchyard at the oddly-named village of Bunny, on the road between

Nottingham and Loughborough, stands a small building bearing a long inscription stating that it is a school founded 250 years ago for the children of Bunny and the nearby village of Bradmore. The plaque commemorates the occasion, and declares that the scholars were to be instructed in "mysteries" and trades, as well as educated in "true reading, legible writing, and arithmetic."

All this was provided under the will of a member of the Parkyn family, who benefited the village in many ways. It is reasonably certain that, in addition to being taught the subjects already mentioned, the pupils at

Bunny were also instructed in wrestling, for Sir Thomas Parkyn was a skilled exponent of that sport in the 17th century. His monument in Bunny Church shows him in characteristic wrestling attitude, with a vanquished opponent stretched at the foot of the memorial!

A curious story is told about another old school building in the Midlands. It can be seen at Appleby Parva, Leicestershire, and was a grammar school run by a board of governors. Tradition says that when they sent to London for plans in preparation for the erection of the building, in the 17th century, they were wrongly supplied with a set of drawings prepared by Sir Christopher Wren.

The truth of this belief has never been definitely proved, but if the story is correct the old grammar school at Appleby Parva is the only one designed by the famous architect of St. Paul's Cathedral.

Another romantic incident in connection with this Leicestershire school concerns an occasion when the governors advertised for a schoolmaster. Among the applications was one from Samuel Johnson—the man who later became famous as Dr. Johnson—but he was turned down as insufficiently educated! His failure to obtain the post was a deep disappointment to him, for at that time he sorely needed the £60 salary which went with it.

Leicestershire has another ancient school building at Osgathorpe, with attractive almshouses adjoining. The school now serves as a library,

but in the early 18th century it had sixty pupils and a schoolmaster who received a salary of £140 a year—an unusually high fee for such a post in those days, especially as a house was also provided.

The scholars paid no school fees, apart from 2s. 6d. at the start, funds being provided from a legacy left by a local man called Thomas Hurley. He died in 1711, and he also left an endowment for the almshouses adjoining the school.

Not all our ancient village schools are without pupils to-day. At Burnsall, Wharfedale, is a grammar school founded by Yorkshire's own Dick Whittington, and

## Romantic Old Schools

By Arthur Nettleton



The ancient grammar school of Market Harborough is a tiny building on stilts. Traders' stalls once occupied the space beneath it.

it is in use to-day. The founder was Sir William Craven who, as a youth, made his way to London, became rich, and was elected Lord Mayor in 1611. He never forgot his native village of Appletreewick, and a few years before he became London's chief citizen he founded a free grammar school at Burnsall—the building that is still in use. The dormitories where the boarders slept are much as they were when the first pupils arrived 350 years ago.

In those days, and for more than 200 years afterwards, the approach to the school was through the adjoining churchyard, and the scholars used the churchyard as their playground! Sir William Craven also had a stone pavement constructed alongside the Appletreewick-Burnsall road, so that scholars who were non-boarders and who had to walk to the school from Appletreewick could do so dry-shod.

Eugene Aram was usher at the school for a short time. He received £10 a year; the schoolmaster was paid £120 at that time.

Not far away, at Threshfield, is an old school with a ghost! This picturesque



establishment with mullioned windows and a doorway like a church porch was built in 1674, with funds left by the rector of nearby Linton.

The wraith is that of a fiddler, known as Old Pam, whose music is said to come from the schoolroom on dark winter nights. In real life Pam was the village musician, who played for dancing and other gay affairs in the district.

Another character connected with the school was a schoolmaster who adopted an unusual method of punishing pupils caught robbing his apple trees. He gave them needles and thread, and made them sew the fruit back on the trees.

One of the oddest old schools in Britain stands at Market Harborough. A black-and-white building, it is on posts, the open space below it having once been occupied by market stalls. Round the outside are carved texts from the Bible, together with the founder's name. He was Robert Smyth, and the school he built dates from 1614. Little is known about him to-day, however.

Burnt Yates, a village in Nidderdale, has a school which in one way is unique. It was founded by an Admiral Long, and he made a rule that children bearing the same surname as his were to have first claim on the school! The rule is no longer enforced, though the school is still functioning.

Little is known about Admiral Long's naval career, but when he came to his native Nidderdale on one occasion he was met at Ripley by a great crowd, most of



Another old grammar school, at Bunny, Notts., founded 250 years ago.



whom claimed at least slight kinship with him. He endowed Burnt Yates school in 1760.

For nearly 450 years Guildford, in Surrey, has had a grammar school, and the buildings in use to-day date in the main from 1553, when Edward VI endowed an already existing school. One of the most interesting points about the present building is that it contains a rare collection of chained books. Equally entertaining is the fact that in the very earliest days of the school its scholars played cricket. In fact, the earliest known reference to the game occurs in Guildford Corporation records, which state that the pupils amused themselves with "creckett."

Nearly as old as Guildford Royal Grammar School is the ancient grammar school at Ashbourne, Derbyshire. It owes its beginnings to Queen Elizabeth, who gave it its charter in 1585. The buildings no longer serve their original purpose, having been adapted as a schoolmaster's residence and boarding house for pupils,



The free school and almshouses established at Osgathorpe, Leicestershire, nearly 250 years ago.

but the exterior presents a picture of Tudor architecture. Inside is a fine old winding staircase of solid oak, made in the reign of James I, at a cost (so it is said) of only £5.

Shakespeare's grammar school at Stratford-on-Avon is an architectural gem and one of the attractions of the town. In reality it is a combined guildhall and school, the lower part having served for guild business and the upper part having been the school. The position once occupied by Shakespeare's desk when he was a pupil is now marked with a brass plate.

Perhaps the most picturesque old grammar school in the Home Counties is the one associated with John Hampden, at Thame, Oxfordshire. It is a lovely building with creepers on the walls, and is set amidst delightful surroundings. It was founded as far back as 1575, and it is just one of a considerable number of schools in England that are noteworthy for their history, charming settings, or links with famous men.

## The Pied Piper of Hamelin

Many readers will know the story of the Pied Piper of Hamelin, from their primary school days, but I daresay only a few will have heard the story which the people of the Hamelin area of Western Germany generally believe to be the true one. This version, told to me by a German schoolmaster of that locality, is that in the days when the area was mainly agricultural and times were bad there, a rich nobleman of Bavaria who passed through Hamelin offered most of the younger men of the place work on his Bavarian estates until better times returned in their home district. After some years he had become so satisfied with their farming that he gave each of

them a piece of land and invited them to settle and make their homes there. When this news reached Hamelin it caused much unhappiness, especially among the older folk whose sons had gone to Bavaria.

As can be imagined, in the course of time this story gradually became changed, eventually attaining the form we all know so well. But the version that the schoolmaster claimed to be the true one is supported by the fact that many surnames which are fairly rare occur almost exclusively in the district of Bavaria to which the young men are said to have emigrated and in the Hamelin district of Western Germany.

W. D. N. FOOTE (Cuffley, Herts.)



# A Sinking Arctic City

## Buildings to be Towed to New Site

By John Westbury

**B**ECAUSE it is threatened by river erosion, and is in danger of sinking below river level, the entire Arctic city of Aklavik is being moved soon to a new and safer site. This is a task of gigantic proportions, such as has never been attempted before north of the Arctic Circle.

Aklavik, lying in the Mackenzie District of Canada's Northwest Territories and in the Mackenzie Delta region, has grown within the last twenty years from a tiny trading station to a "city" of some 400 people, who live there permanently. Yes, it is a city, for it has a cathedral! It is the centre for fur trading, administration and missionary activities of a vast area of some 50,000 square miles, serving the needs of some 16,000 people—whites, Eskimos and Indians. The area within which it lies covers nearly a third of Canada.

A visitor to Aklavik in the summer months might never suspect that he was walking on sinking ground, or that the nearby

Aklavik, on the delta of the Mackenzie River, in the Canadian Arctic. A heavy thaw would have caused the ground beneath it to sink to river level, so it is to be moved to a safer position.

Mackenzie River and the surrounding lakes were endangering the entire community. But residents have long been aware of the growing dangers of subsidence, although until recent scientific soil tests were carried out extensively they did not realise that the soil on which the city stands consisted of 50 per cent. water in the form of ice crystals.

The experts immediately realised how quickly a grave catastrophe could befall the city. Any day one of several possibilities—an unusually warm summer

following a relatively mild winter, perhaps, or intensive cultivation, excavation, or the heat from buildings—might easily cause the frost to thaw as far as ten feet down—and the entire surface area of the city would then drop at least six feet, right to the level of the menacing river!

This unhappy discovery in itself was sufficient for the Canadian Department of Resources and Development to decide that a move to a new site was the only answer to the city's many problems, and that the move should take place as soon as possible.

Yet it wasn't an easy decision to take, for people do not like being moved, lock, stock and barrel, as the saying goes, because some official says so! The residents weren't keen. Though the new danger was pointed out, they felt, as people do who



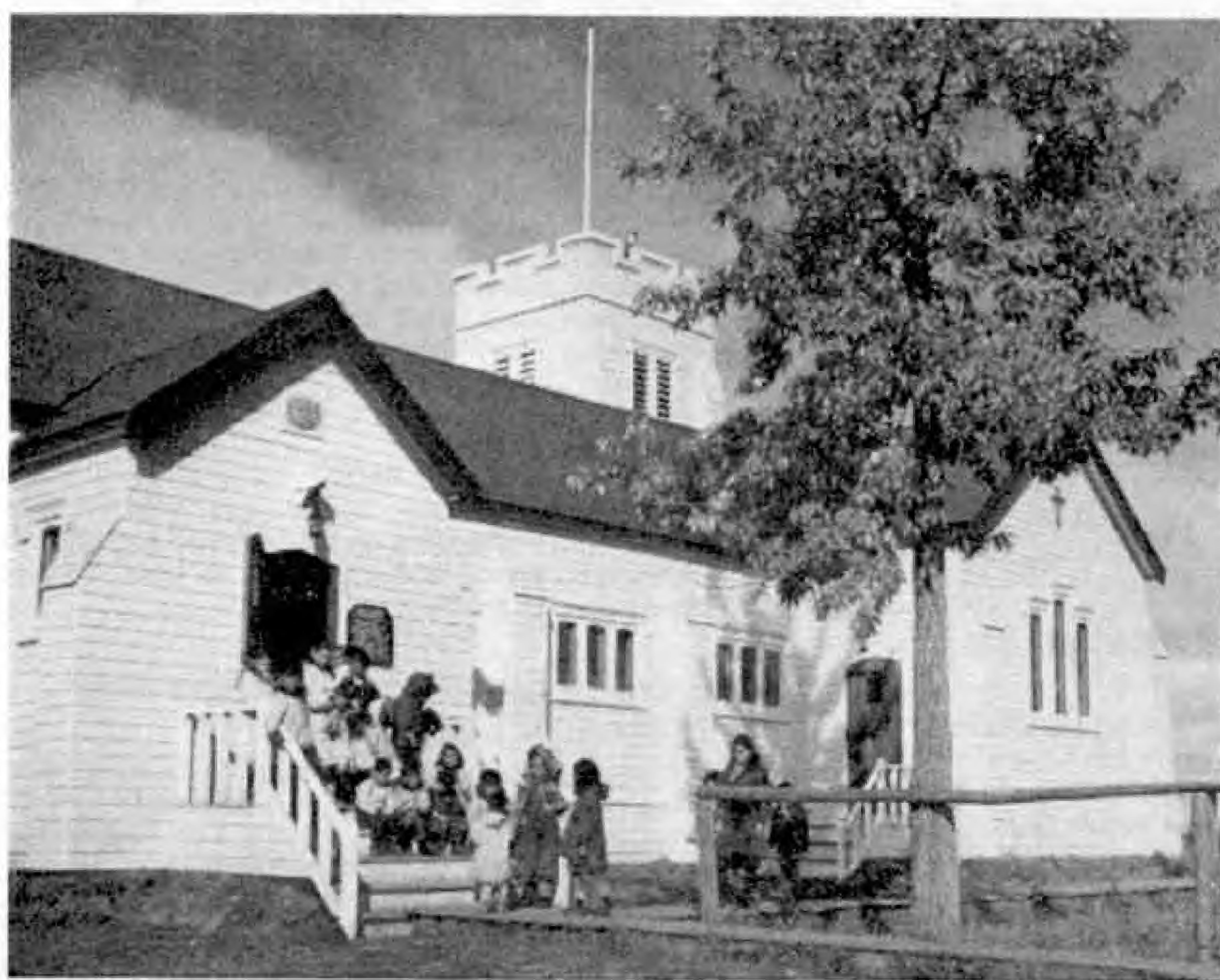
have lived for years with a threat that hasn't fully materialised, that other solutions were possible with the aid of Government advice and money.

The residents were all too well aware of the fact that house repairs, caused by moving foundations, were both frequent and costly. They knew also that water supplies and sewage disposal were inadequate and growing more so every



year, and that this constituted a grave threat to health. Yet surely it was possible to build new water and sewer systems, they thought, to reinforce foundations and to protect the river banks from further erosion.

Government experts examined the whole problem with scientific and minute care, but found that to do all this would be



enormously costly, with no guarantee that in ten or twenty years the problem would not recur. The alternative—the only one—was the removal of the whole community to a place where essential services would be relatively inexpensive.

There were other problems, too, which money couldn't solve. For instance, what about communications with the outside world? Aklavik has no road or rail connections with any other part of Canada. It has no airfield, nor is it possible to build one on the soggy, swampy ground. The city's only link with the rest of the country is through diesel tugs, which during the summer months make two round trips between Aklavik and Waterways, Alberta.

For three months at least every year, Aklavik is virtually cut off. For six weeks of this three months there is a complete freeze-up, which is followed by a six-week break-up, when the soil becomes a veritable sea of mud. If, during these concurrent periods, a disaster such as a fire or an epidemic should hit Aklavik, neither aircraft nor ship could rush—or even crawl—with help for the stricken inhabitants.

Paradoxically, the climate is more "equable" in Aklavik than in many regions farther south. For instance, its snowfall, at 40–50 in. annually, is only half that of the Canadian Great Lakes region. Winter temperatures average 15–23 deg. F. below zero, which is considerably higher than those of the Eastern Arctic of North America. Summer is decidedly pleasant,

with warm and bright days during which ordinary light clothing is worn. During June, July and August the average mean temperatures range from 50 to 60 deg. F., with

Aklavik has only some 400 permanent residents, yet it is a city and here is its Cathedral. Canadian Government photographs.

highest temperatures of 80 to 85 deg. During these months an influx of traders and other seasonal visitors increases the population to 800.

This reasonable climate was about the only factor that favoured the city's staying where it was. So this year Canadian scientists, construction men and surveyors have been busy examining the possibilities of new sites, a difficult task. Good building ground is one vital necessity, and a flat strip is needed also for the new airfield. The site should be near or beside a river, without the threat of erosion problems later on.

When a number of possible sites have been found, government officials together with Aklavik's leading local citizens and missionaries will make a final decision. Then will begin the task of building roadways and preparing building sites, with sewage and water systems, from planning blueprints that will indicate the city's entire layout.

The first part of the actual move, if it goes according to plan, will take place next winter, and the last buildings probably will be moved during the winter of 1956–7. In many cases entire buildings will be moved from their present site in Aklavik to the new site without dismantling them. Heavy tractors will tow them along the frozen rivers—a startling sight for an unwary visitor if he could get there!



# BOOKS TO READ

*Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.*

## THE OBSERVER'S BOOK OF AUTOMOBILES

By RICHARD T. PARSONS (Warne 5/- net)

Here is a real wealth of information about motor cars, all very well and concisely given. In alphabetical order readers will find accounts of a very large number of the world's motor cars. In each case a brief history of the manufacturing firm concerned is followed by details of all models current at the time of publication, with half-tone illustrations and line drawings. The recognition of cars is one of the points that the author has kept in mind, so special details are given for each car under the heading of "Appearance".

As far as can be seen the details given are accurate, and certainly show a great amount of industry on the part of the author. In an introduction, Stirling Moss rightly expresses appreciation of the vast amount of information he gives in his book, to find all of which without it would mean a lengthy search. He makes his book more interesting to the general reader by including sections on the history of the motor car and how the engine works, with a short glossary of technical terms and details of international number plates.

## THE AIRPORT VISITOR AND AIR TRAVELLER

(Penman Enterprises Ltd. 2/-)

The current edition of this interesting Annual begins, appropriately, with a description of what goes on "behind the scenes" at the new London Airport. There are the usual lists of U.K. civil aerodromes and airports, and of airlines operating to and from them; and the customary list, in alphabetical order of registration letters, of nearly 850 air liners operating from airports in the United Kingdom. There are brief technical details of the types of air liners now to be seen at British airports, and half-tone illustrations of many of the aircraft types mentioned.

An important section gives, in the form of question and answer, information that the prospective air traveller wants to have on such subjects as what to wear, what luggage to take, regulations to be observed aboard the aircraft, meals during flight, and so on.

## "ABC OF BRITISH SPORTS CARS"

By ALBERT DOUGLAS

## "ABC OF MOTOR RACING"

By JOHN DUDLEY  
(Ian Allan 2/- each)

The publishers are to be congratulated on producing in *ABC of British Sports Cars* a booklet that is very much wanted today. Most readers of the M.M. will know something of many of the sports cars dealt with in the booklet, but all will welcome this compact account which gives interesting information on the background and history of the various cars dealt with as well as on the cars themselves.

The contents are arranged alphabetically, so it is easy to find details of any desired car. For each make there is at least one good photograph, with details of outstanding features of the chassis, the engine and transmission, and sufficient information is given to enable the reader to recognise each car when he sees it and to appreciate its outstanding features. At the end of the booklet is a complete table of specifications of the cars described and illustrated.

*ABC of Motor Racing* is on similar lines, and the main specification details are tabulated at the end of each descriptive note. A most interesting chapter describes briefly the main features of the principal motor racing circuits in this country and abroad, and there are maps of some of the courses. The half-tone illustrations of racing cars are excellent.

## FLYING MODEL AIRCRAFT

By D. S. LAIDLAW-DICKSON (Foyle 2/6)

Aeromodelling, the construction and flying of model aircraft, combines many pleasant hours of indoor handicraft occupation with equally enjoyable open air expeditions for flight testing. It is less expensive than many other hobbies, and indeed can be started with the most elementary tools and equipment.

This handbook does not contain the usual sets of instructions for building a variety of model aircraft, although details and plans for a simple power model are included. It is rather a guide to the "how and why" of aeromodelling generally, describing various types of model wings, fuselages and tailplanes, and giving practical guidance on the construction of simple versions of them. There are useful notes on model power units, fuels and propellers, and the covering and finishing of model aircraft.

Other aspects of the hobby dealt with are control-line, radio-controlled, scale and competition models; and there are chapters on gliders and sailplanes, and less orthodox types. Finally there is good advice on the flying of model aircraft.

## "THE SPIRIT OF MODERN ADVENTURE"

By G. F. LAMB (Harrap 9/6)

The book begins excitingly enough, with stories of escapes from a prisoner of war camp in Germany. From this we turn to adventures on top of the world and under the sea, the former the ascent of Mount Everest, and the latter the exploration of underwater depths. Naturally the air figures prominently in a record of this kind, and we have here told for us the epic stories of flights by Kingsford Smith, famous for his crossings of the oceans in the pioneer days of aircraft, and Neville Duke, the famous test pilot.

There is certainly plenty of variety in the book, for next we read of strange adventures among elephants in the Burmese jungle, and in the Arctic. Here we have the strange story of the achievements of Spencer Chapman, who has explored in Greenland, has accomplished Himalayan climbs and has survived in the Malayan jungle in circumstances of incredible difficulty. The book ends with the story of the capture of the land speed record by John Cobb.

There are seven plates and several line illustrations in the text.

## "ABC BRITISH MILITARY AIRCRAFT"

## "ABC CONTINENTAL MILITARY AIRCRAFT"

## "ABC CIVIL AIRCRAFT RECOGNITION"

By JOHN W. R. TAYLOR  
(Ian Allan 2/6 each)

The new editions of these now familiar booklets are of uniform pattern, the aircraft dealt with being arranged in the alphabetical order of their manufacturers' names. Facts and figures have been completely revised and brought up to date, and a great many new illustrations introduced. In the case of "major" types of aircraft there is, for each machine, an excellent half-tone illustration, a 3-view silhouette drawing, specification details and a paragraph on recognition features. In the second part of each booklet aircraft of lesser importance are illustrated and their main technical details given.

The booklet on *British Military Aircraft* also contains an illustrated section, with notes, on U.S. and Canadian military aircraft that are seen over here regularly, but are not in service with the R.A.F. or Fleet Air Arm.



# MECCANO MAGAZINE

## Junior Section

### A Swan Picture

I suppose that you have already admired the fine picture of a swan and her cygnets alongside these words. Nothing can be more graceful than a swan afloat, and the bird seen here looks equally attractive on land, with her long neck curved and her wings stretching out. The cygnets are in strange contrast, with their small fluffy brown bodies and comparatively short necks, and it is a little difficult sometimes to believe that they will grow up into the swans that are so attractive on our lakes and streams.



This photograph of a swan and cygnets was sent in by J. Balmond, Birmingham 6.

The swan is of particular interest just now, for it appears to be increasing in numbers in many parts of the country. The bird most of us know is that known as the mute swan. There are two other swans that can be seen in Great Britain, one of them a much smaller bird, but they are visitors only during the winter months, when they fly down from more northerly regions. They have black instead of orange beaks and swim with their necks upright, and not curved.

Formerly the swan was more or less a domesticated bird, and the swans of the country were regarded as the property of the reigning monarch. Swan keeping seems to have died out a century or two ago, and most of the swans in this country since then have been wild in their habits.

### An Outsize Stamp

The stamp reproduced on this page will take a

bit of licking, for its area is practically  $3\frac{1}{2}$  square inches. What it is Mr. Metcalfe tells you on the *Stamp Gossip* page of this issue. All that I can add is that in producing it the Saar authorities appear to have kept the publicity value of stamps well in mind. If other countries that have similar ideas begin to follow in their footsteps, and issue stamps so much larger than is customary, much of the artistic value of these miniatures will be lost.

Fortunately there is a limited amount of space for stamps on an ordinary envelope, so presumably those of us who collect them will be able to continue with pieces of the size to which we are accustomed, and which will fit our present stamp albums. Nevertheless an occasional outsize stamp does not come amiss, and can make a good centre-piece on an appropriate page of our album.





## HORNBY RAILWAY COMPANY

By the Secretary

THE Editor has arranged that my usual talk appears this month in the Junior pages of the *M.M.* because I wish to talk about the Hornby-Dublo doings of several young readers, some of whom are seen in two of the accompanying pictures. As you know I am always glad to receive photographs of readers' layouts, and they are particularly welcome when they include the owner or owners of a system. Good pictures of this kind show very clearly that Hornby-Dublo railwaying is a happy business, but there is little need for me to tell you this. I shall therefore hope to receive many photographs from my Hornby-Dublo friends,

Robert Langton, H.R.C. No. 212522, of Leicester, is busy in the garden with his Hornby-Dublo layout. His control position at the end of the board gives him a good view of the whole system.

some of them no doubt, at this time of the year, showing layouts operated in the open like that of H.R.C. member Robert Langton, of Leicester, whom you see in the illustration on this page.

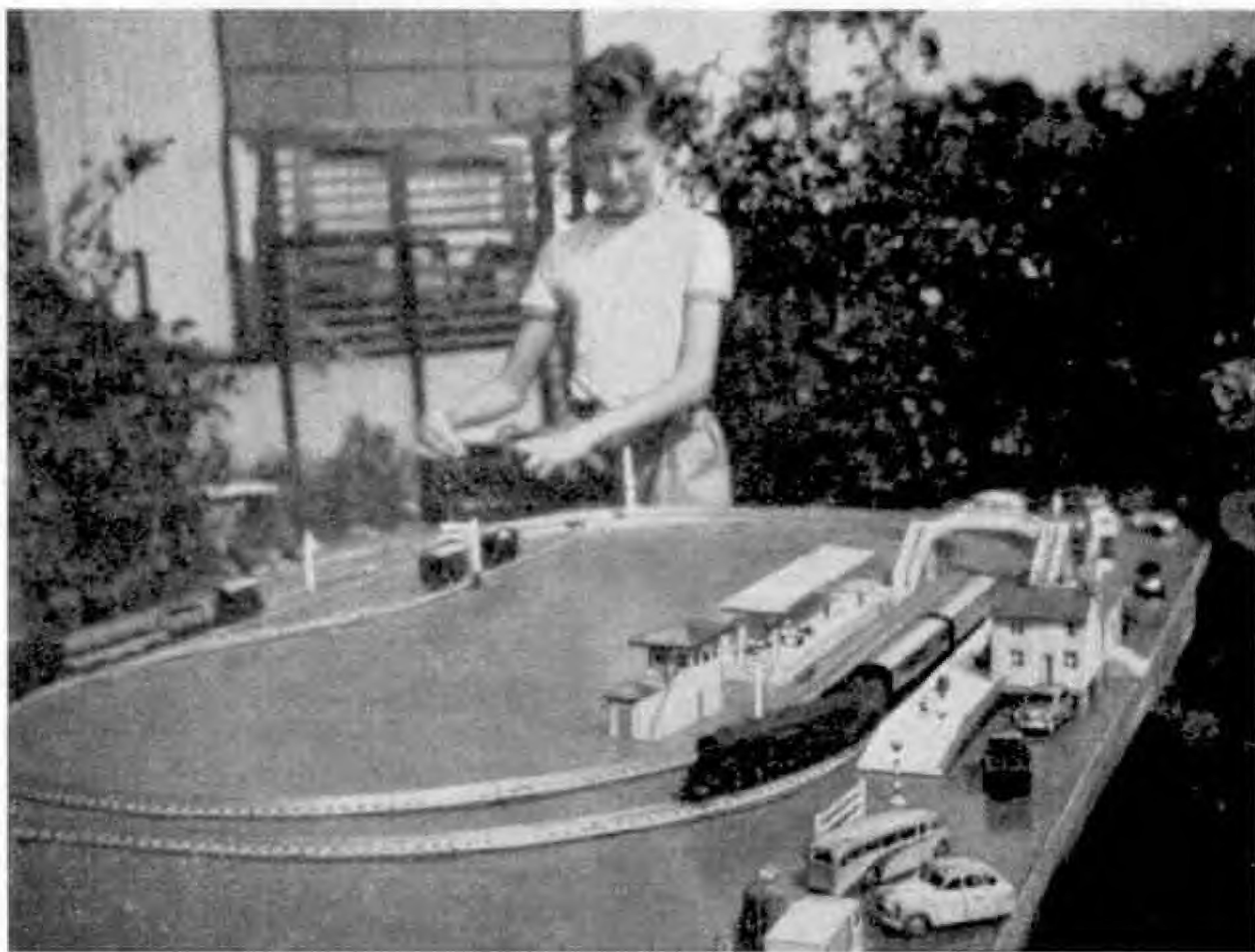
Robert's railway is arranged on a baseboard so that it is readily moved from one place to another, which means that you do not have to do without your railway if you feel you must play out of doors. For this purpose the baseboard should not be too big, or it may not be easy to move it. It is important too, as has often been said in the *M.M.*, that the actual board should be well stiffened with supporting timbers.

A point that sometimes worries Junior Hornby-Dublo railwaymen is to settle the best position for the control gear. It is not always easy to find space for this on a board that is already well occupied by track and accessories and in such circumstances it is usual to arrange a separate control

# Happy Railway Running

panel. Whether this is done or not the actual location of the Controller and its attendant Switches should be chosen to give the operator a good general view of the line, and also to allow him to be near important spots such as stations, or sidings where much train working and shunting is likely to be carried out.

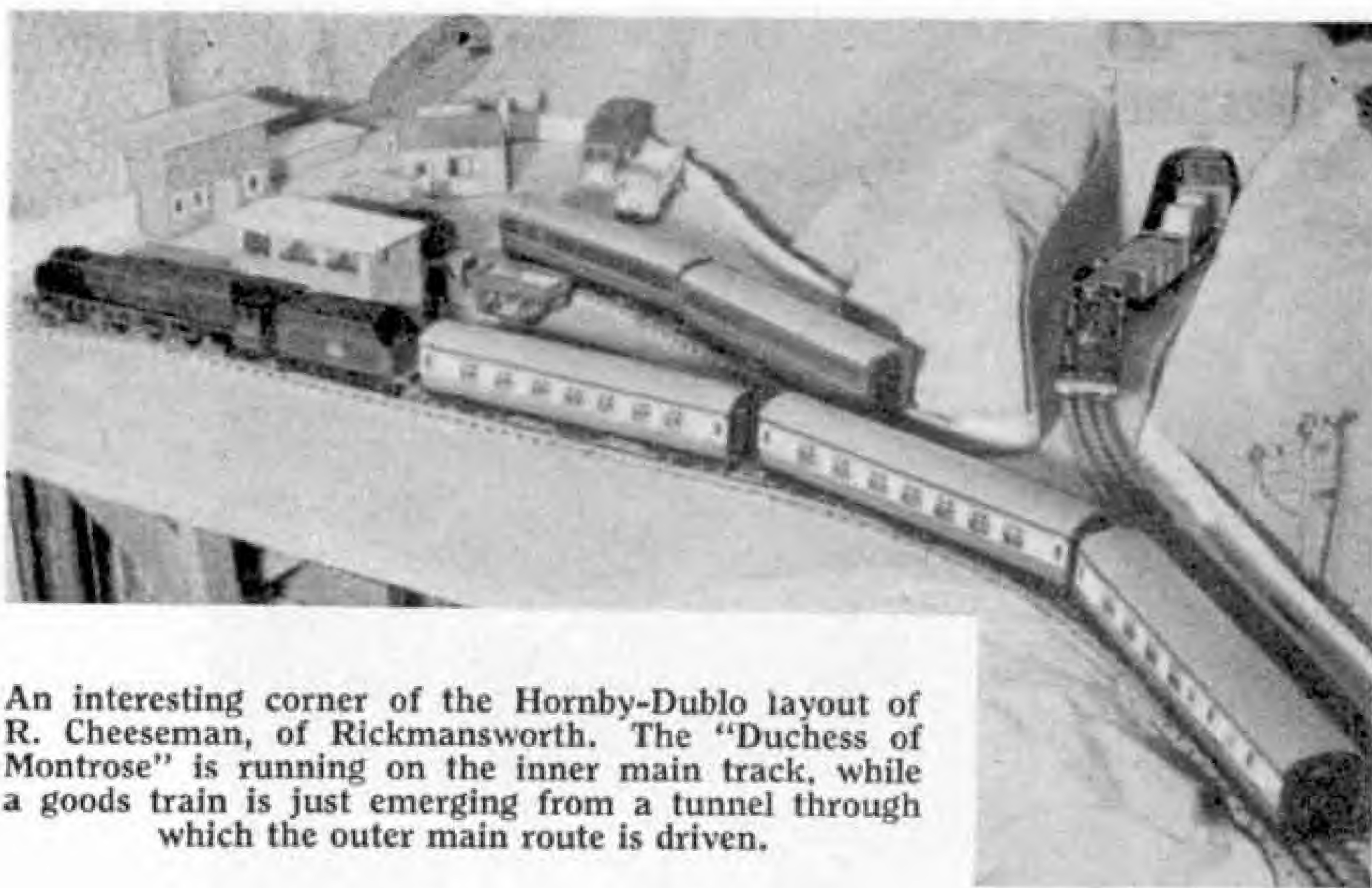
It is not always necessary to concentrate the control apparatus on one of the longer sides of a rectangular baseboard, but space reasons and the form of a layout can



sometimes compel you to do this. Your Controller and gear can quite well be placed at the end of the board, where a good general view of operations will be afforded. You will not find it difficult to control the movements of trains that are running towards you when they are stopping alongside a platform, but those going the opposite way may need a little more judgment. If these trains fit the platforms comfortably, and there is no reason why they should not do so with the Platform Extensions in use, you will have to judge your stopping position more by watching the tail of the train than by watching the engine, which is what most of us do.

Where only Electrically-Operated Points,





An interesting corner of the Hornby-Dublo layout of R. Cheeseman, of Rickmansworth. The "Duchess of Montrose" is running on the inner main track, while a goods train is just emerging from a tunnel through which the outer main route is driven.

Signals and Uncoupling Rails are used there will scarcely be any need for the operator to move from his position at the controls. If there are some hand-operated accessories, particularly Points or an Uncoupling Rail, then you should endeavour to place these so that they are within reasonably easy reach. Alternatively, the control position may have to be settled in relation to the placing of Points of this kind.

It is particularly necessary to have these things placed carefully where there are loops and avoiding lines in a layout, as there are on the system of Hornby-Dublo enthusiast R. Cheeseman, of Rickmansworth, part of whose railway you see in the upper picture on this page. This is quite a good railway for variety in train movements and a specially interesting point is that the rail formation is changed in general detail from time to time.

At the moment, the usual method of working is for the passenger trains hauled by a Duchess 4-6-2 to keep to the inner main track. Goods traffic takes the outer road and this involves traversing the tunnel from which a train is seen emerging. The tunnel remains a single-line bore because, we are told, of the extreme hardness of the rock through which it is driven. So the main line cuts "across country", so to speak, and thus avoids the

tunnel. Pick-up goods trains are favourites in the working programme, while the attaching and detaching of through coaches is a feature of the station work with passenger trains.

So we come to the cheery-looking Sayers children, of Cambridge, New Zealand, for in the illustration, Peter, Donald and Christine are obviously enjoying themselves. There is no doubt about it; their railway is really a

family affair. Peter Sayers, the youngest of the three, is never so happy as when he has a train movement to carry out that involves plenty of good shunting. Donald, who is the eldest, takes charge of the main line expresses, while their sister Christine has a specially interesting job, that of signalwoman, making sure that the line is clear for the various train movements and setting points and signals according to the requirements of the traffic. Their father, too, is no stranger to the attractions of Hornby-Dublo; when the three youngsters have gone to bed he settles down to enjoy himself with a round of train running, no doubt thoroughly earned. In such happy conditions we can surely expect further development of this railway.



Peter, Donald and Christine Sayers, of Cambridge, New Zealand, are obviously happy with their Hornby-Dublo Railway. While the boys run the trains their sister is kept busy as a signalwoman.





## DINKY NEWS

By **THE TOYMAN**

## Haymaking and Harvest

ONE of my readers wrote recently to tell me that when he is outdoors, either in town or country, he keeps a sharp look-out for attractive settings that he can model in miniature and provide with Dinky Toys. This is a practice of my own, for scenes built up on this basis are livelier and more pleasing than those that grow up haphazard, or are built up like geometrical figures.

During one recent walk in the country I stopped to watch work in progress on a small farm. This seemed to me the very thing for an August Dinky Toys scene, so I set out to reproduce the scene as well as I could. Just how successful I have been you can judge from the two farming pictures on these pages.

Two of the most attractive features of farming are haymaking and harvest, and these were the scenes I chose. The basic requirements for each were the same as those for most of my previous layouts. A good baseboard was covered with a dark cloth stretched out and pinned in place. Sand and dyed sawdust sprinkled on the cloth gave the effect of fields, and for the divisions between these I

used hedges made from very fine steel wool, as I have described previously.

Two or three suitable buildings, made from cardboard, and a "country" backcloth completed the basic scene. But this time, as an experiment, I tried out an idea to break up the hard line that sometimes shows between the baseboard

and backcloth. I painted trees and bushes on pieces of cardboard, then cut these to shape and pinned them to the baseboard just in front

of the backcloth. I leave you to judge the effect, but I think you will agree that there is a fine impression of depth in the scenes I have illustrated.

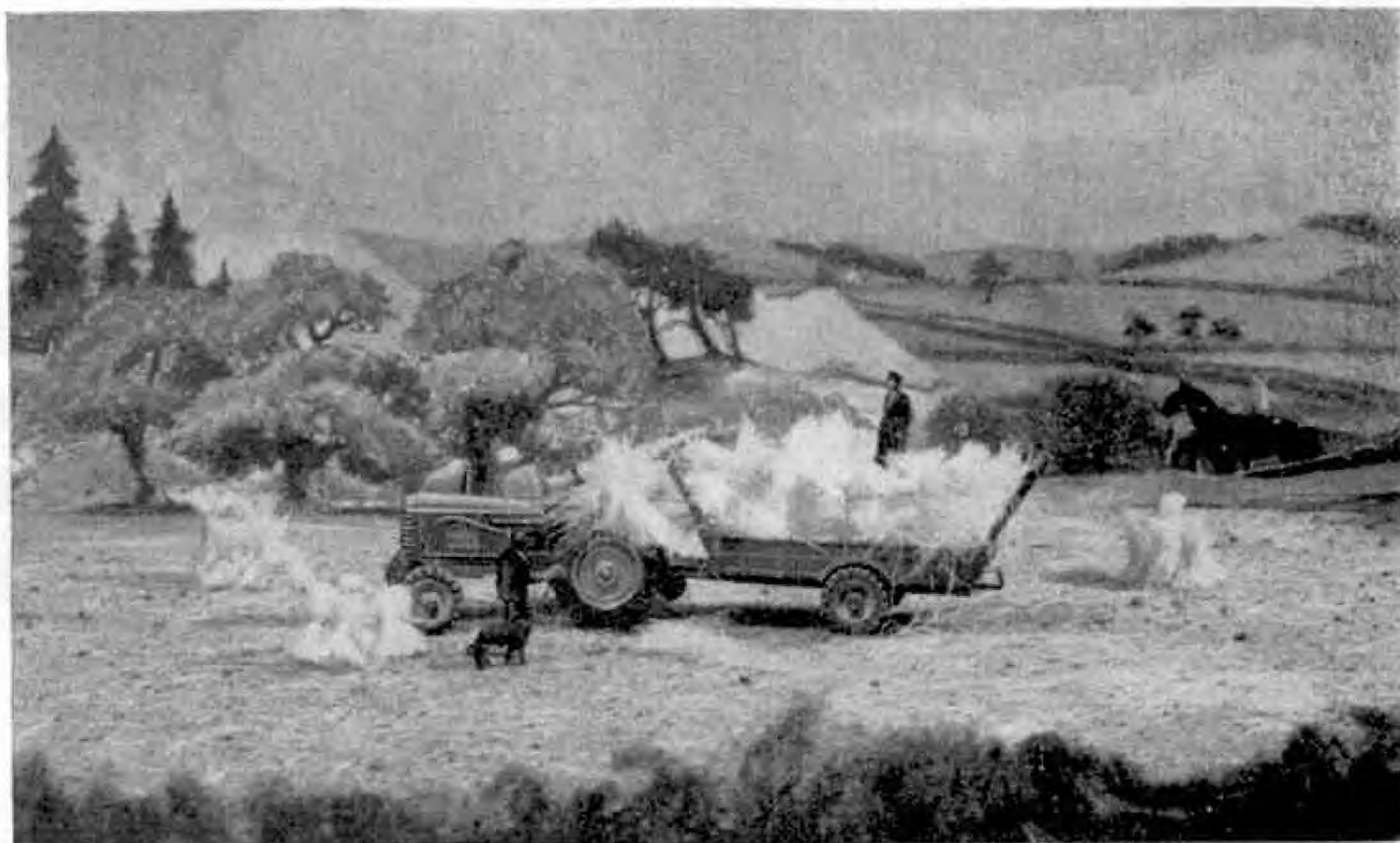
Finding suitable material to represent corn and hay was a bit of a problem. First I tried wood wool, but this seemed to be too coarse. Then I hit on the idea of using strands of rough straw-coloured sisal cord cut into  $\frac{3}{4}$  in. lengths. This proved to be just the thing for the purpose. Used loose they gave a good representation of hay, and tied in small bundles they had the appearance of miniature sheaves of corn.

In the upper illustration on the next page

Fig. 1. Haymaking on a miniature farm layout, showing the Dinky Toys Farm Tractor and Hayrake, Dinky Toys No. 310 in action.



Fig. 2. Gathering in the harvest. Here the farmer is making good use of his Halesowen Harvest Trailer, Dinky Toys No. 320, hauled by a Massey-Harris Tractor, Dinky Toys No. 300.



a farm hand is seen loading the sheaves on to a Dinky Toys Harvest Trailer towed by a Massey-Harris Tractor, with a worker on the Trailer placing them in position. The haymaking scene on the opposite page is equally realistic. Here I made good use of my Dinky Toys Farm Tractor and Hayrake (No. 310). This is a really attractive working model in which the tines or prongs are raised and lowered automatically as the Hayrake moves along. Hauled behind my Massey-Harris Tractor this looked quite at home, with the tines lifting at intervals and leaving the "hay" in swathes behind it.

No farm is complete without its livestock

and animals, and so the animals of Dinky Toys No. 002 were left to wander over the scene—but clear of the haymaking, of course.

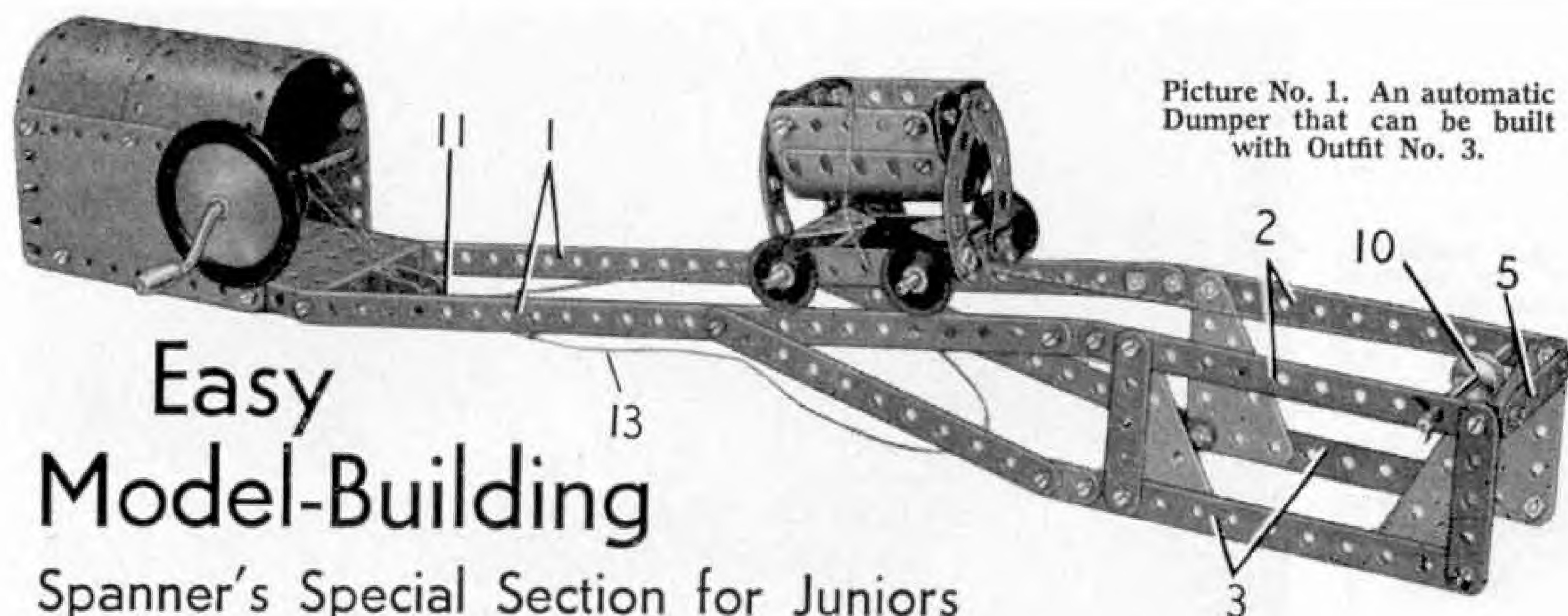
Now for a change. My third picture this month shows the fine model garage that Mr. A. Philip, Portobello, has built for his son's extensive Dinky Toys collection. The garage was made from odd scraps of material easily obtainable, but the result is very neat and tidy as a garage should be. The young owner has lots of fun playing with this model, and it also has the advantage that it is a very convenient storage place for Dinky Toys when play hours are over.

In my picture the garage is seen with the roof removed to reveal the interior. A ramp leads from ground level to the first floor and allows vehicles to be driven directly on to it. Miniature petrol pumps are provided, together with a removable "manhole" cover, supposed to conceal the underground piping system through which a Dinky Toys Tanker refills the garage tanks. Altogether the garage is a most attractive model, and Mr. Philip assures me that the work of making it has been well repaid by the pleasure it has given his son.



Fig. 3. An effective garage for use with Dinky Toys. It was built by Mr. A. Philip, Portobello, for his young son.





Picture No. 1. An automatic Dumper that can be built with Outfit No. 3.

## Easy Model-Building

Spanner's Special Section for Juniors

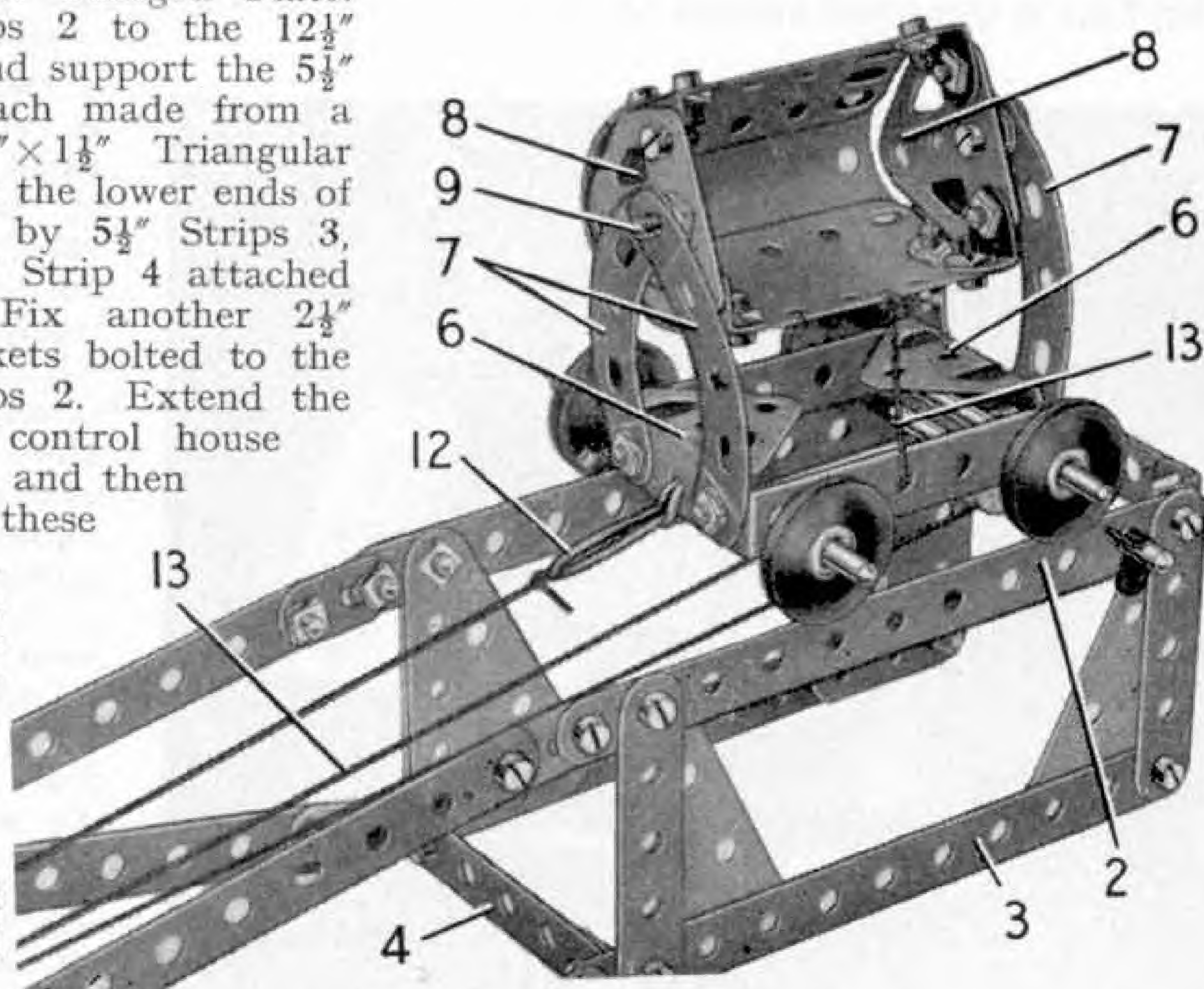
THIS month I am describing an attractive working model automatic Dumper that I have designed specially for young model-builders who possess an Outfit No. 3. In building the model commence with the base of the control house for which you will need a  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flanged Plate. This is fitted with  $4\frac{1}{2}'' \times 2\frac{1}{2}''$  Flexible Plates to form the sides. The back is a  $2\frac{1}{2}'' \times 2\frac{1}{2}''$  Flexible Plate bolted to an end flange of the Flanged Plate and connected to the top rear corners of the sides by Double Brackets. Bolt a Semi-Circular Plate to the top of the  $2\frac{1}{2}'' \times 2\frac{1}{2}''$  Flexible Plate, and make the roof from two  $5\frac{1}{2}'' \times 2\frac{1}{2}''$  Flexible Plates curved as shown in Picture No. 1.

The dumper truck travels on inclined rails made from  $12\frac{1}{2}''$  Strips 1 bolted to the front corners of the Flanged Plate. Connect two  $5\frac{1}{2}''$  Strips 2 to the  $12\frac{1}{2}''$  Strips by Fishplates, and support the  $5\frac{1}{2}''$  Strips by four legs, each made from a  $2\frac{1}{2}''$  Strip and a  $2\frac{1}{2}'' \times 1\frac{1}{2}''$  Triangular Flexible Plate. Connect the lower ends of the legs on each side by  $5\frac{1}{2}''$  Strips 3, joined across by a  $2\frac{1}{2}''$  Strip 4 attached to Angle Brackets. Fix another  $2\frac{1}{2}''$  Strip 5 to Angle Brackets bolted to the front ends of the Strips 2. Extend the Strips 3 towards the control house by means of Fishplates, and then bolt  $5\frac{1}{2}''$  Strips between these and the  $12\frac{1}{2}''$  Strips 1.

You can make the trolley part of the dumper truck by bolting two Trunnions 6 to the lugs of  $2\frac{1}{2}'' \times 1\frac{1}{2}''$

Double Angle Strips. Use the same bolts to support also two  $2\frac{1}{2}''$  Stepped Curved Strips 7 at each end, and arrange these Strips so that their upper ends overlap. The wheels are 1" Pulleys and they are mounted on  $3\frac{1}{2}''$  Rods. On one side the two Pulleys are fixed by their set-screws to the Rods, but those on the other side are held on the Rods by Spring Clips.

Now make the tipping hopper of the dumper truck by bolting a  $2\frac{1}{2}'' \times 1\frac{1}{2}''$  Flexible Plate to each side of a U-section Curved Plate. Then bolt two Flat Trunnions 8 to Angle Brackets fixed to the  $2\frac{1}{2}'' \times 1\frac{1}{2}''$  Flexible Plates, and in each Flat Trunnion fix a  $\frac{3}{8}''$  Bolt 9 by a nut. Place two Washers on each Bolt and then pass its end through the overlapped holes of one pair of Curved Strips 7.



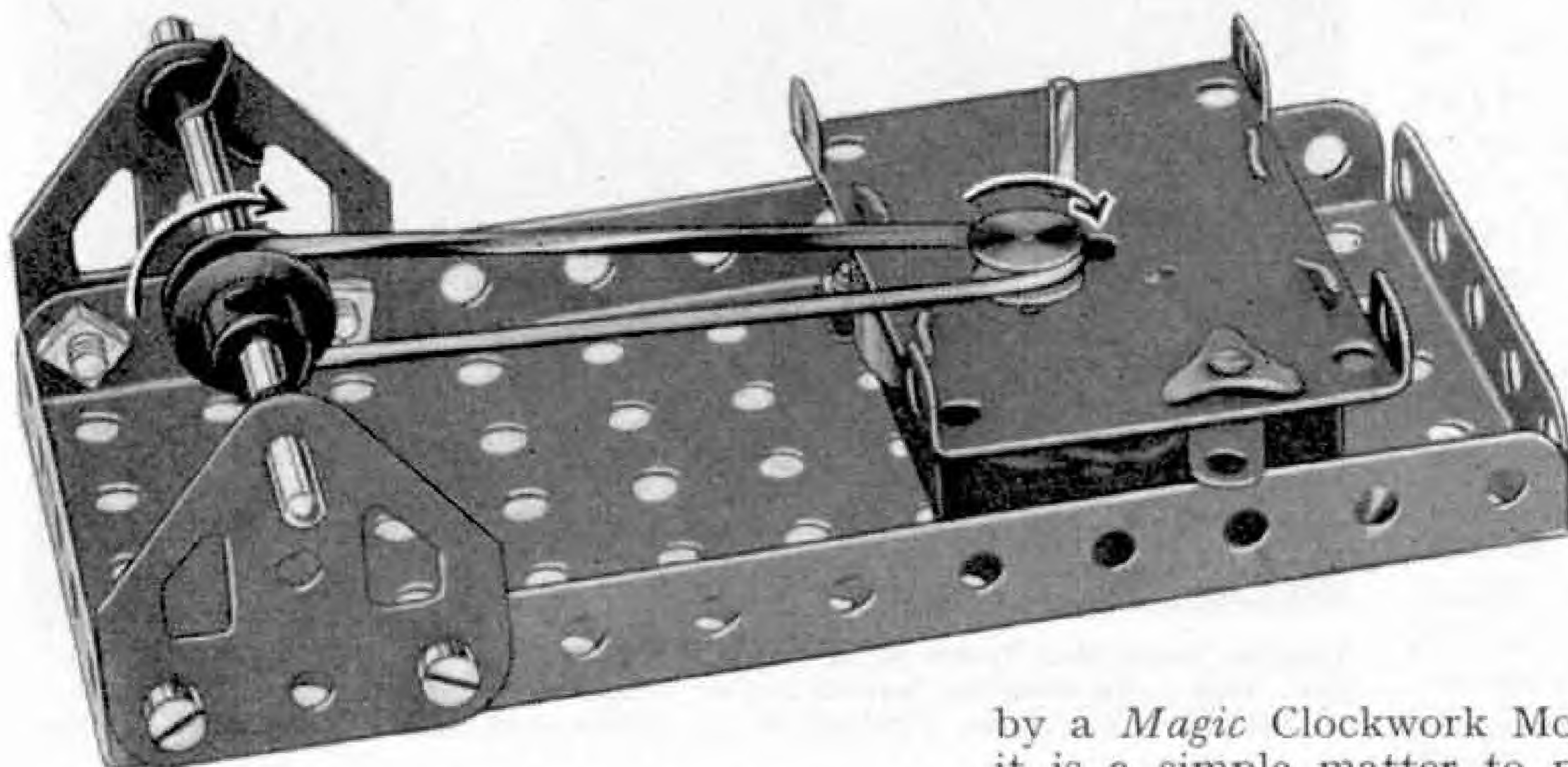
Picture No. 2. Close-up picture of the Dumper truck showing how the truck hopper is tipped at the end of the runway.



Mount a Crank Handle at the front of the control house and a  $3\frac{1}{2}$ " Rod fitted with a  $\frac{1}{2}$ " loose Pulley 10 in the Strips 2. Now bolt a Stepped Bent Strip to the front flange of the  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flanged Plate, and in it place a  $1\frac{1}{2}$ " Rod 11.

### Using the Magic Clockwork Motor— A Useful Tip

Occasionally I receive letters from very young model-builders who have come across an unexpected snag in models driven



Picture No. 3. This picture shows a straight belt drive from a Magic Motor to the axle of a model.

Tie a length of Cord to the front of the truck and then take it round the Pulley 10, under Rod 11 and pass it three or four times round the Crank Handle. Now take the Cord again under Rod 11 and tie it to a Driving Band 12 looped through the rear of the dumper truck. Stretch the Driving Band slightly so as to pull the Cord tight.

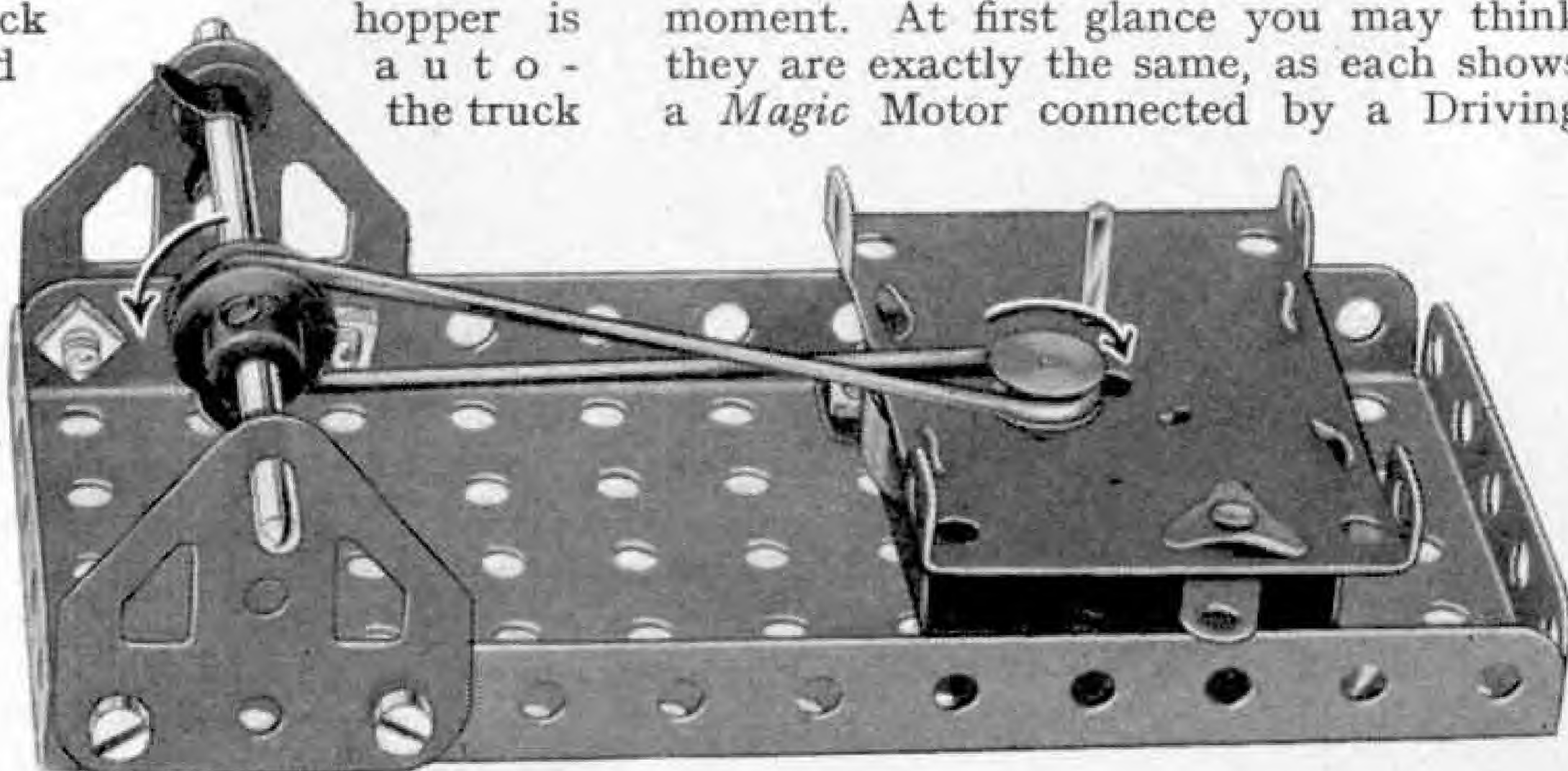
The model is that the truck tipped automatically when

arranged so hopper is auto-the truck

by a *Magic* Clockwork Motor. Of course it is a simple matter to place a Driving Band between the Motor pulley and a Pulley on the driving axle of the model, but to the surprise of some of my young friends their models often run backwards! As the *Magic* Motor is non-reversing it seems a difficult problem at first, but actually it is very easy to arrange things so that the model will work in the right direction.

Just look at Pictures 3 and 4 for a moment. At first glance you may think they are exactly the same, as each shows a *Magic* Motor connected by a Driving

Picture No. 4. In this picture the driving belt from the Magic Motor is twisted in order to give a drive in the reverse direction to that shown in Picture No. 3.



reaches the end of the rails. This is done by a Cord 13, which you should tie to Rod 11, and then pass through one side of the truck before tying it to the side of the hopper. Adjust the length of Cord 13 so that it tips the hopper when the truck reaches the end of the rails. As it returns towards the control house the hopper will swing back under its own weight.

Band to a  $\frac{1}{2}$ " Pulley. If you look more closely, however, you will see that they differ in the way in which the Driving Band is arranged. The Pulley fitted to the Motor turns in a clockwise direction, that is in the same direction as the hands of a clock, as shown by the arrows, and in Picture No. 3 the Driving Band is placed so that

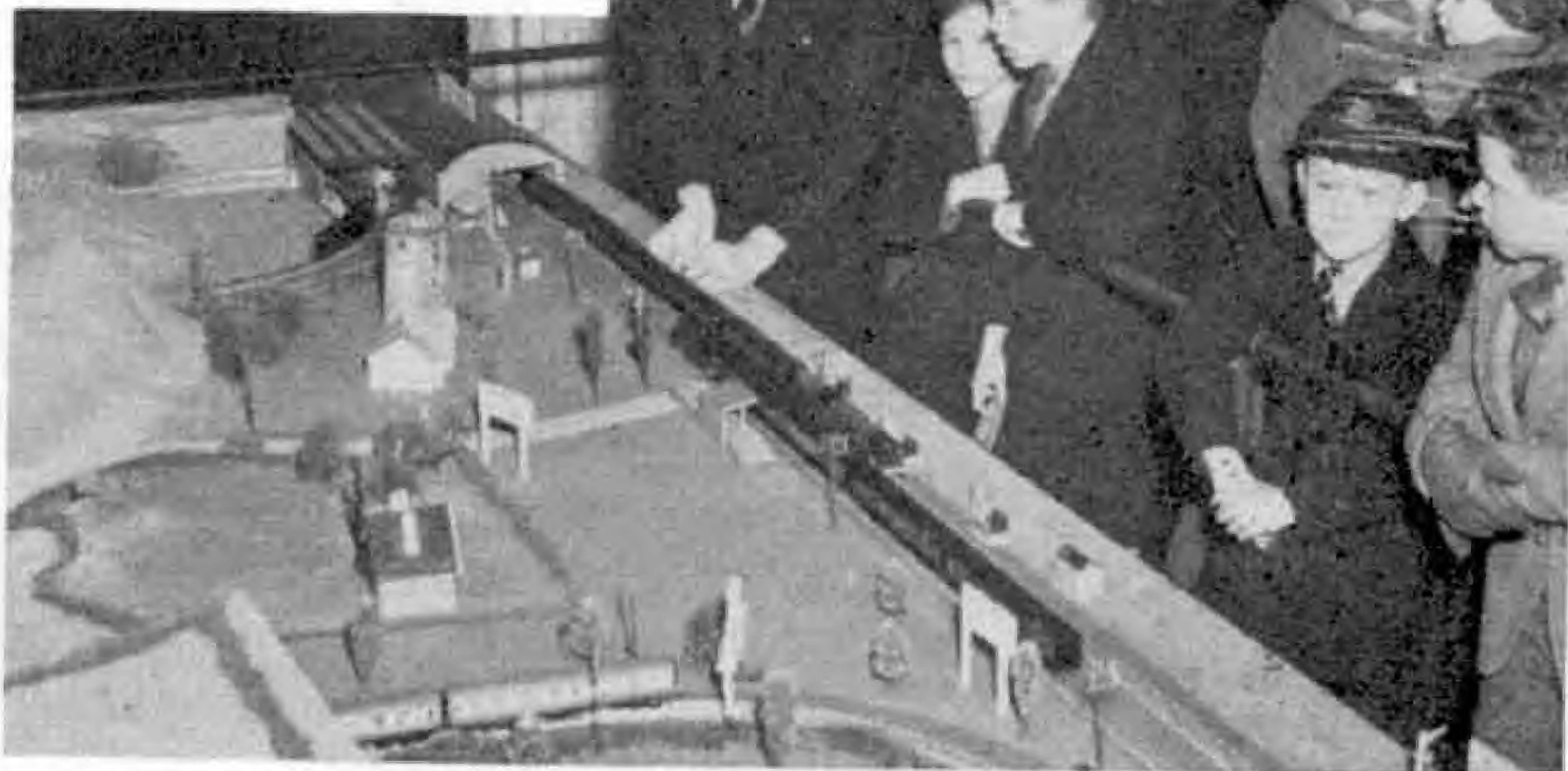
(Continued on page 458)



# Hornby-Dublo Mail Trains

THE Hornby-Dublo railway shown in the accompanying picture was built up by Mr. C. F. Blake, Westbury-on-Trym, Bristol, for a special Post Office "Night Mail" demonstration at Harrods Ltd., London, earlier in the year. The Night Mails represented were the Down Special Travelling Post Office, which leaves Euston at 8.30 p.m. for Aberdeen, and the corresponding Up Mail train. The Down Special was hauled by the *Duchess of Montrose* and the Up Special by the *Duchess of Atholl*.

Three of the mail coaches had been fitted with automatic apparatus for picking up mail while travelling at speed, with ground nets to collect sorted mail

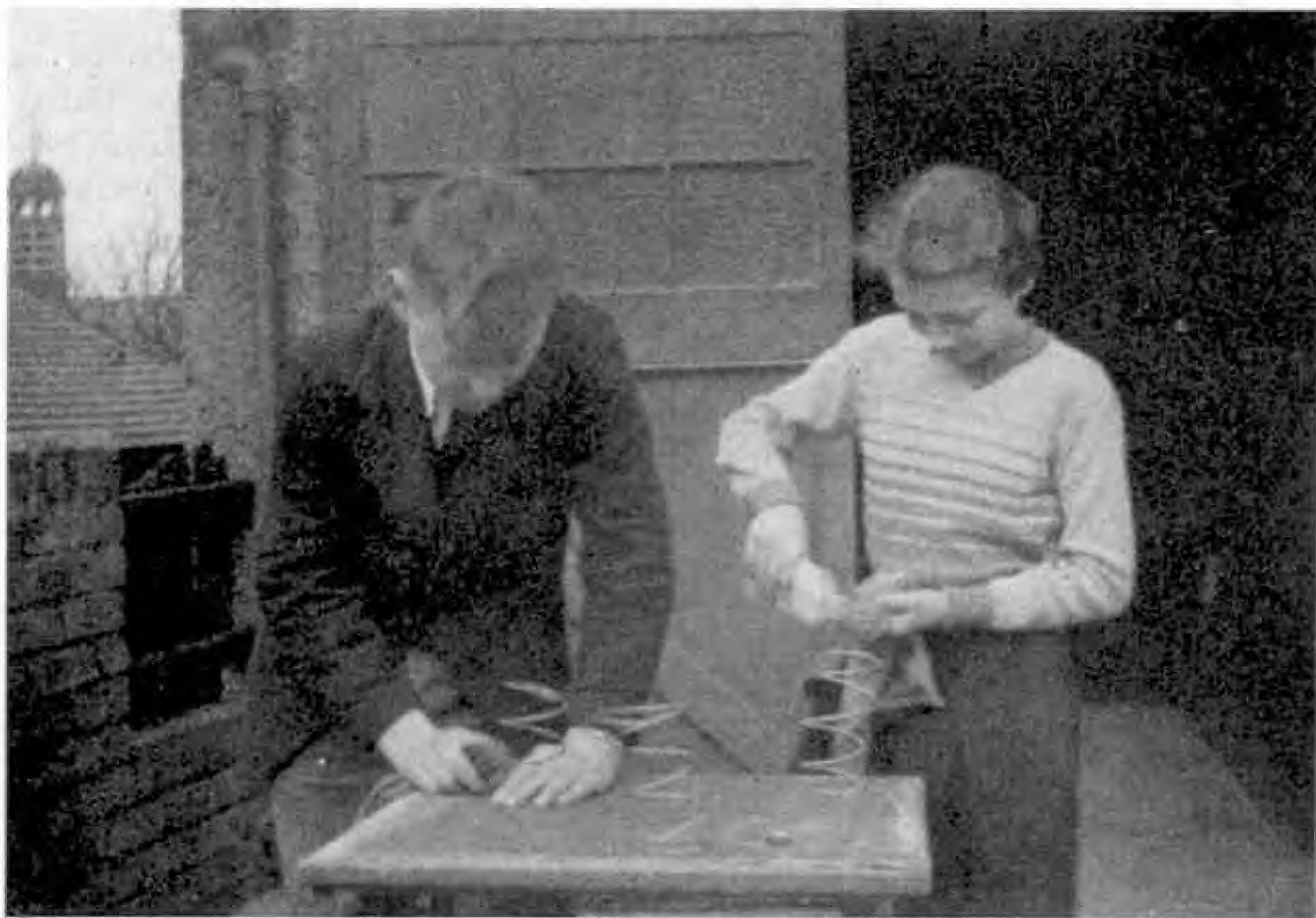


Hornby-Dublo Mail Trains in the Night Mail demonstration at Harrods in January last. Two trains were run, hauled by the "*Duchess of Montrose*" and the "*Duchess of Atholl*" respectively. Photograph by courtesy of H.M. Postmaster General.

## Pillar Boxes

The appearance in the April issue of an Edward VIII pillar box seems to have started a countryside search, judging by the cards and letters I have received, and I am sorry that I cannot reproduce more of

the splendid photographs that readers have sent along, or deal here with their letters. I must refer to one of the latter, however, from Mrs. L. A. Bush, Hockwold, Thetford, because of its interesting variety of pillar boxes. One with the initials V.R. is in the wall of a house known as The Old Post Office at one end of the village of Hockwold, and at the other end, almost a mile away, is one with the initials G.R., but whether this is George V or George VI I do not know. Between the two, in the wall surrounding the present



Michael Warriner, Wallasey, who submitted this photograph in an M.M. Photographic Contest, called it "Spring Cleaning".

from the travelling post offices. Collections could be made from all three lineside standards together, or from one at a time, as required. This variation added considerably to the interest of working.

post office, is a third one bearing the initials EIIR. For good measure there is another Victorian letter box at Lakenheath station, only a mile and a half or so away.

THE EDITOR



## From Our Readers

*This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.*

### Britain's Largest Water Tower

The accompanying photograph shows the new water tower at Spalding, in Lincolnshire. This is the largest in the country and its size can be judged from the two-storied building in the foreground. It is in fact 100 ft. high.

The tank at the top holds three quarters of a million gallons. It is made of concrete, with a 5 in. layer of shingle all over the top to keep the water from warming up in the sun. The lower part of the erection is occupied by offices, and access to the roof is by means of a spiral stairway passing up through the centre of the tank.

Owing to the difficulty of finding a solid foundation in the fenland soil it was necessary to sink concrete piles about 30 ft. into the ground on which to base the tank. To make the piles, hollow tubes were driven into the ground to the required depth. Then concrete was forced in from the top of each, so that it bulged out at the base of the tube to form what is known as an "elephant's foot."

R. DIXON (Spalding).



This water tower at Spalding is the largest of its kind in Britain. Photograph by R. Dixon, Spalding.

### An Unusual Bell Tower

The City of Dublin is famous for its architecture, which is mainly of the Georgian type. There are many fine examples of other building types, however. One of the best known of these is the "Campanile" or bell-tower of Trinity College, Dublin.

This fine structure is the crowning glory of the front square of the University. It is of an Italian style and contains the great bell of the College. The bell was cast in Gloucester in 1744 and originally hung in "All Hallows", a monastery that marked the original site of Trinity. The Campanile itself was built in 1853, the architect being Charles Lanyon.

It is only on important occasions such as the onset of examinations that the great bell with its solemn and penetrating roar summons the students to their tasks.

BARRY E. WHITE (Dublin).



The Bell Tower of Trinity College, Dublin. Photograph by Barry E. White, Dublin.



# "The Portage Flyer"

## The Huntsville and Lake of Bays Railway

By Dollis Muir

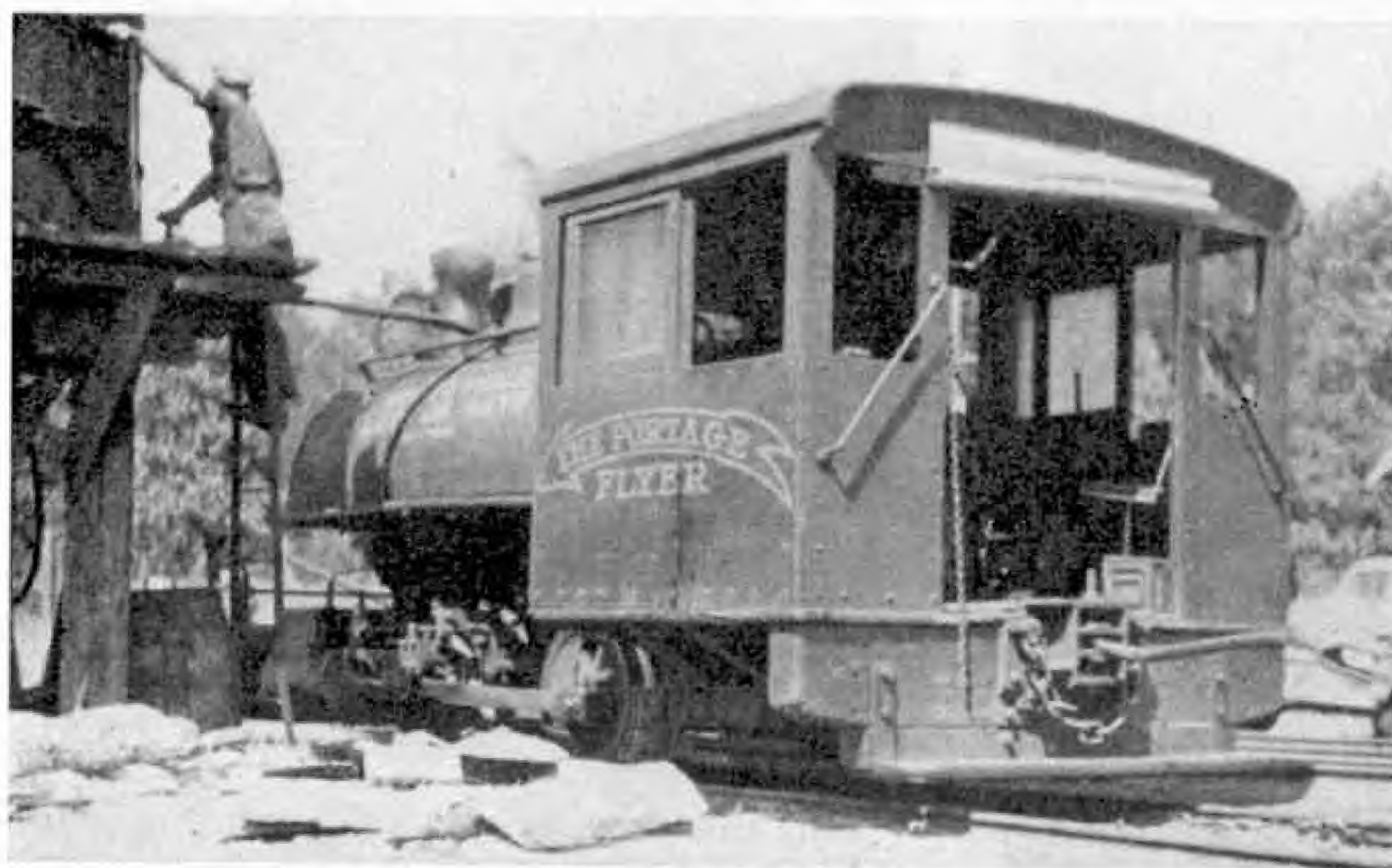
It was a hot, summer afternoon when we stopped the car in the town of Huntsville, Ontario, about 150 miles north of Toronto in the heart of Ontario's vacation land. We heard a passer-by remark that the world's shortest railway system was only a few miles away. Upon enquiry, we learned that there was really a railway for which this claim was made, and that it was only about 25 miles away.

For most of the way, we followed a paved road. But the last few miles proved to be a gravel road with a decidedly "washboard" surface and plenty of dust. We followed other cars heading in the same direction, enduring the dust as best we could. Passing the lonely farms, we could hardly believe that a complete railway system lay in this isolation, but on swinging around a curve in the road, we suddenly found ourselves at South Portage, the southern terminus and

Travellers leaving the Toronto train at Huntsville can take a boat from Huntsville to North Portage, cross the narrow strip of land separating the two lakes by the Huntsville and Lake of Bays Railway, and take another boat to their destination on the southern lake where there are many summer homes.

Not all of the revenue of the railway is derived from the travellers from Huntsville. Canoes, small boats, supplies and freight formed a chief source of revenue before slow-moving teams and wagons were replaced by motor transport, and there is still a small but steady flow of these items. A considerable portion of the revenue to-day is derived from tourists, many of them from distant parts of Canada and the United States, who find their way, despite the lack of advertising, just for the ride over the "hump" and back.

When we arrived, the driver and fireman were busy stoking the fire and taking on water for the next trip. The water is carried in a



The engine of "The Portage Flyer" takes on water in readiness for a trip over what is claimed to be the world's shortest railway.

chief station of the Huntsville and Lake of Bays Railway.

South Portage consists of an engine shed, a water tower, a covered siding on a wharf, a tiny shop for the convenience of tourists and the few permanent residents, and one or two houses. The wharf serves the southern of the two lakes connected by the mile and an eighth railway line. At the other end of the line, on the northern lake, which is about 80 feet higher, is North Portage.

saddle-tank fitted to the upper half of the boiler and, without the tank, the boiler appears to be very tiny indeed,

especially when compared with the huge boilers on main line locomotives. Within a few minutes, the locomotive was ready and was switched over to the train on the covered wharf. There are two open-sided coaches, but only one was used for this trip. There was also an enclosed goods wagon—called a box-car in Canada—which dwarfed the tiny engine. Coupling-up was a simple matter, as coupling bars about four feet long are used and the connection is by a



simple pin. The long bars are a necessity because of the extremely sharp bends in the line.

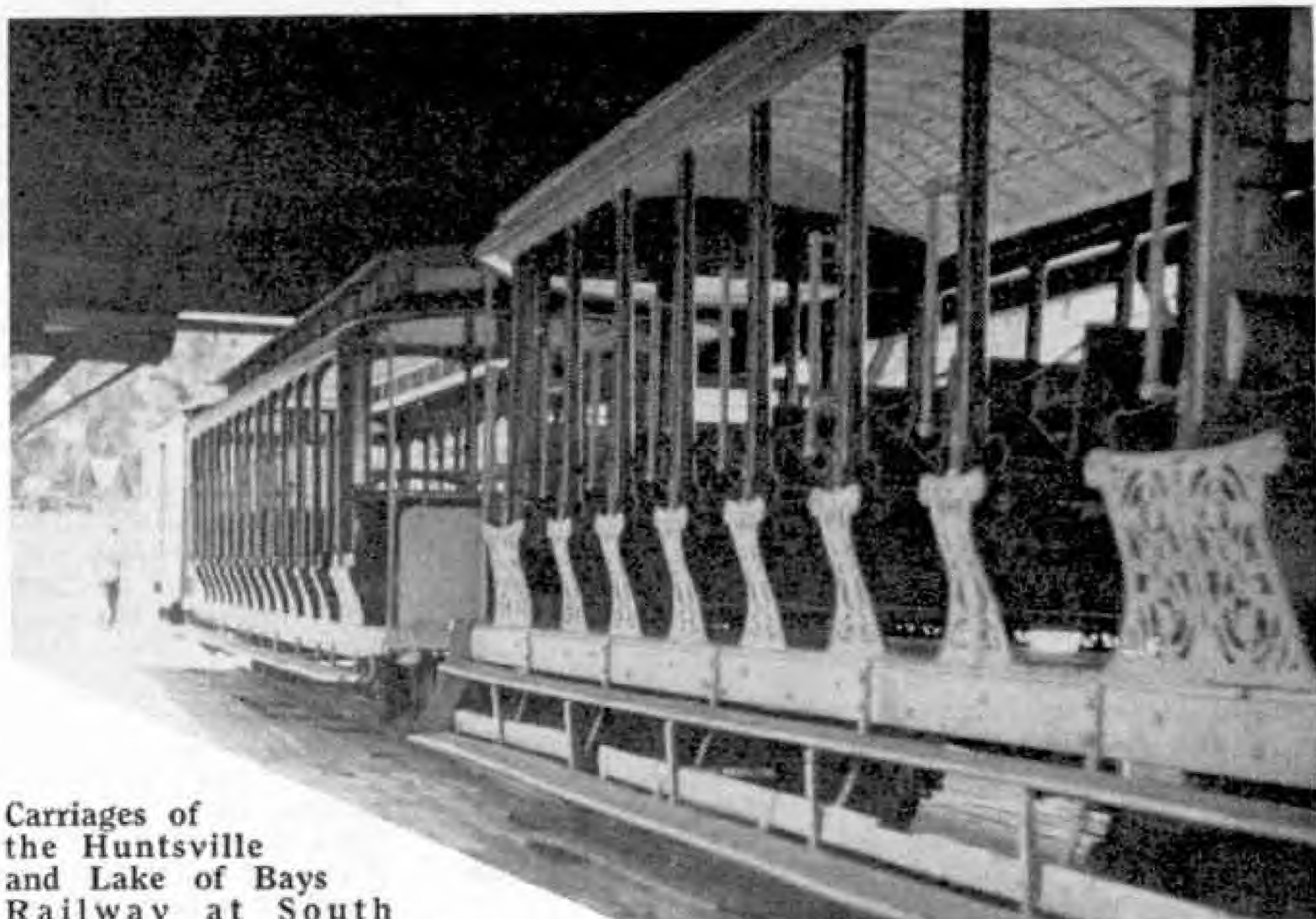
When the conductor—the man in charge of the train—gave the signal to start, we glanced at the steep hill in front of us and wondered how the tiny 20 ton locomotive would ever get the train started and up the grade. We knew that there was another engine of 25 tons in weight in reserve in the shed but, to our surprise, we got away with little fuss or bother. We were soon climbing steadily, swinging sharply to left and right, with flanges screeching and groaning, past lovely little ponds where the water plants and the frogs contended for the limited space, through thick woods where branches of trees swept the sides of the carriage and, finally, up the steepest part of the grade near the top, where some of the more adventurous of the passengers got off to pick wild flowers. Those of us who remained on board speculated on the origin of the name *The Portage Flyer*!

Over the "hump", the engine settled down quietly for the short run in to North Portage station while the passengers wiped coal dust from their eyes. The fireman had been stoking heavily and the only protection for the passengers was the glass end of the coach. A wire screen had been fitted over the top of the smoke-stack to prevent sparks from setting fire to the countryside, but it was no help to the passengers.

A number of canoeists and their canoes were waiting on the wharf at North Portage station when we arrived. The boat from Huntsville had not yet arrived, so there was a wait of about half an hour and the "Over-the-hump" passengers used the time to wander along the lake shore or to examine the 0-4-0. According to the plate on the front of the boiler, it was built in 1926 by the Montreal Locomotive Works and it is numbered 5. Both locomotives were brought to Ontario from Nova Scotia, where they had been used in the coal fields.

There was the usual bustle when the

Huntsville boat arrived and everyone crowded around. In a few minutes, the train was ready to leave. The canoes had been loaded, along with sundry articles of freight, and the canoeists themselves joined the other passengers in the carriage. This time, the carriage was well filled and there was much merriment as the passengers were thrown back and forth



Carriages of the Huntsville and Lake of Bays Railway at South Portage, its main terminus.

across the seats because of the uneven road-bed. The train too was making better time, since the grade was all downward after the first few hundred yards.

At the end of the journey, the passengers tumbled off, some to take the motor launch waiting at the wharf, others to return to their cars, and a few to take pictures of the engine and the carriages. Meanwhile the engine crew took the engine to the water tower and refilled the saddle tank. When they had brought the engine back and had coupled it to the train again, they disappeared for an hour or so until the next run and the tourists and the passengers departed.

All now seemed very peaceful and we knew that we should go, too. But there is a peculiar fascination about this tiny railway. Some idea of the appeal it has for the public is revealed by the prominence given to a recent derailment—the second in its history. Toronto newspapers carried the story on the front page with a picture of the train, and it is doubtful if the tale of anything short of a wreck on either of Canada's two major railway systems would have been given half the space.





Westland Whirlwind helicopter of the Fleet Air Arm, fitted with hook under the tail-boom as part of special equipment for mine-sweeping duties.

## Air News

By John W. R. Taylor

### Helicopter Mine-Sweepers

Many aircraft spotters in the Yeovil area were surprised a few weeks ago to see a Westland Whirlwind helicopter with what appeared to be a deck-landing hook under its tail-boom. Because of its ability to take off and land vertically, a helicopter is the one type of aircraft that does not need a hook to get it safely down on to the limited space of an aircraft carrier's flight deck.

Now Westland have announced that the hook is part of the special equipment being fitted to Whirlwinds of the Fleet Air Arm, so that they can be used for mine-sweeping duties. Experiments in America have shown that a helicopter can tow standard paravanes to sweep sea-mines, without any risk of being blown up by the mines. The only discomfort for the crew is that the drag of the tow-line causes the helicopter to fly very much nose-down—sometimes as much as 45 degrees to the horizontal.

### More S-55 Orders

Another news item from Westland's is that Bahamas Helicopters Ltd., of Nassau, have ordered two S-55s to supplement their present fleet of 18 helicopters. To enable them to "land" on the water in an emergency, the aircraft will be fitted with the special kind of floats developed for the S-55s used on B.E.A.'s regular passenger service between London Airport and Waterloo Air Terminal. But they will be nine-seaters; whereas B.E.A. carry only four passengers in their S-55s, because of the extra weight of the floats and the engine silencer needed for operation into the centre of London.

The first Lockheed 1049G Super Constellation of Germany's national airline, Lufthansa. Eventually the company will have eight of these aircraft in service.

B.E.A. are using two Westland S-55s on the London Airport service at the moment—G-ANFH *Sir Ector* and G-ANUK *Sir Kay*. A third S-55 is available as a reserve aircraft, and is being used also for Home Office experiments in the use of helicopters for Civil Defence duties.

### Long Jet Flight

Four F-84G Thunderjets of the U.S. Far East Air Force broke all records for non-stop flights by jet fighters on 18th May last, when they flew nearly 5,000 miles from Tokyo to Williamtown, New South Wales, on a goodwill visit to the R.A.A.F. They were refuelled in the air three times by KB-29 Superfortress flying tankers, and were accompanied by two C-124 Globemasters, one C-119 Packet and a C-54 Skymaster.

### The New Lufthansa

Germany's national airline, Lufthansa, has restarted operations after an interval of 16 years, and the company's four twin-engined Convair 340s are regular visitors to London Airport. Less familiar are the Lockheed Super Constellations which Lufthansa will use on its intercontinental routes.

The airline's pre-war fleet totalled about 120 aircraft; yet the 12 Convairs and Super Constellations will, because of their bigger capacity and higher speed, do more work in a year than the old fleet. Until German crews are fully trained, B.E.A. pilots are flying as captains of the Convairs, with Trans World Airlines' captains on the Constellations.





### Australian Sabres

The Royal Australian Air Force claims that its Avon-powered Sabres, built by the Commonwealth Aircraft Corporation, are the best and fastest Sabres in the world. This is quite possible, as the Avon develops far more power than the General Electric J47 turbojet fitted in the standard F-86F Sabre, and the Australian machines can be recognised by the deeper nose air intake needed by this more powerful engine. Some of the R.A.A.F.'s Sabres are shown in the lower illustration on this page.

### Russian Jet Transport

Moscow Radio has reported that a jet freighter, the IL-20, designed by Ilyushin, is being used to carry printing plates for Moscow newspapers to Sverdlovsk and Novosibirsk each day, so that readers 1,850 miles from the capital can get their morning newspapers at the same time as Muscovites. This is the first indication that Russia has developed civil jet transports.

### Miners Fly to Italy

On Whit-Sunday, a party of 30 Yorkshire miners'

First flight photograph of the improved Convair F-102A delta-wing interceptor. Some of the changes effected in this aircraft are described on this page.



First squadrons to be equipped with Avon-Sabres are Nos. 75, 76 and 77, belonging to No. 78 Fighter Wing at Williamtown, N.S.W. No. 77 is the famous R.A.A.F. squadron which flew Mustangs and Meteors throughout the Korean War. Until last year the other two were in Malta and equipped with Vampires.

representatives flew from Southampton to Genoa aboard one of Aquila Airways' Solent flying boats. Their object was to find a resort on the beautiful Italian Riviera to which convalescent miners, and others in need of an extra special holiday, could fly for a week or two of rest in the sun.

If all goes according to plan, about 500 miners will join the holiday-makers on Aquila's new service this year. In 1956 the total may be many thousands.

### Improved Delta

Improvements to the Convair F-102A delta-wing interceptor have added it to the select list of truly supersonic aircraft able to fly faster than sound in level flight for long periods. The changes, shown in the upper illustration on this page, include a longer fuselage, streamlined fairings on each side of the jet exhaust, slightly upswept wing-tips, redesigned engine air intakes, a "drooping" wing leading edge, and redesigned cockpit hood to give the pilot better visibility.

The single-seat F-102A has a 10,000 lb. thrust Pratt and Whitney J57-P-11 turbojet, with afterburner. It spans 37 ft. and is 57 ft. long.

### Spectre and Screamer

Announcement of the de Havilland Spectre and Armstrong Siddeley Screamer liquid-fuel rocket motors proves that Britain is not overlooking the importance of such engines to boost the power of interceptor fighters during take-off, climb and combat at extreme heights. Use of one of the new rockets, in conjunction with a turbojet for economical cruising flight, as in the French Trident, offers the best chance of intercepting a fast jet bomber at 60,000 ft., until guided weapons are in full, efficient service. No details of the Spectre or Screamer may be given.

### Buried Treasure

When aerial photographs were taken of a field of oats on the hillside at Yeavering, near Wooler in Northumberland, they showed that the crop was richer in certain patches. This proved that the ground had been built on at some time. Archaeologists were called in, and they quickly made finds dating from 1000 B.C., on a seventh century site of a palace belonging to Edwin, one of the kings of Northumbria.



Avon-engined Sabre jet fighters of the Royal Australian Air Force at Williamtown, New South Wales. R.A.A.F. official photograph.



# Pylon Lookout

## Wonders of Sydney Harbour Bridge

IT is easy to understand why Sydney Harbour Bridge, now about 25 years old, is still regarded as one of the wonders of the world, to be visited if at all possible by Australians themselves as well as by all who find their way to the magnificent city of Sydney from other countries. It dominates the city as it strides across the great harbour, one of the finest in the world, and it fits into its surroundings so well that it is not easy to realise its immensity. There is one good way of finding out how large it really is, however; that is to climb to Pylon Lookout, so let us go there.

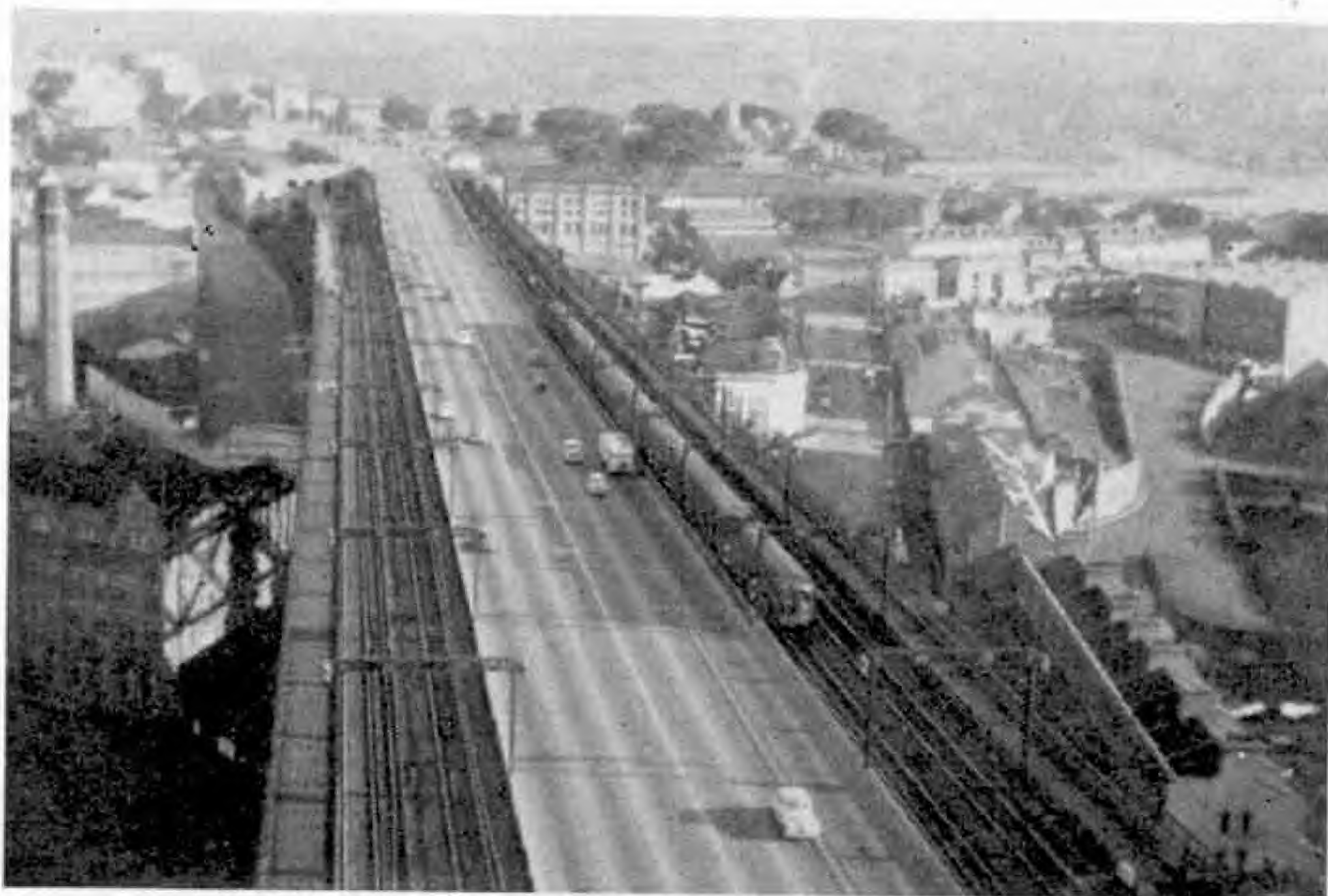
What is Pylon Lookout? At each end of the gigantic steel arch of Sydney Harbour Bridge are two immense stone pylons that climb to a height of nearly 300 ft.—only 150 ft. or so lower than the highest point of the arch—and Pylon Lookout is the one at the south east end of the bridge. On its floors it houses a remarkable collection of attractions to visitors, besides giving them wonderful views of the bridge itself, the harbour and the city, and the surrounding countryside. Those who visit Pylon Lookout, and sign the Visitors' Book, receive certificates on which their names are inscribed, and on the opposite page is a reproduction of the certificate of G. C. Dryden, the reader of the *M.M.* who took the two photographs of the bridge that are reproduced on these pages.

Below the bridge, on Dawes Point, which juts out into the harbour, there is a park from which access to Pylon Lookout

can be gained by means of a lift, but visitors can also approach from the bridge footway. This latter was the route taken by another reader, Barry Hunt, who has described his own visit to Pylon Lookout, where he spent a happy and interesting time. Here is what he has written.

"After watching cars pass through the toll gates of the bridge, we began to walk along the footpath on the right hand side, with the trains and trams crossing the bridge as well as cars. The deck is wide enough to take four train tracks, two tram tracks and six streams of cars.

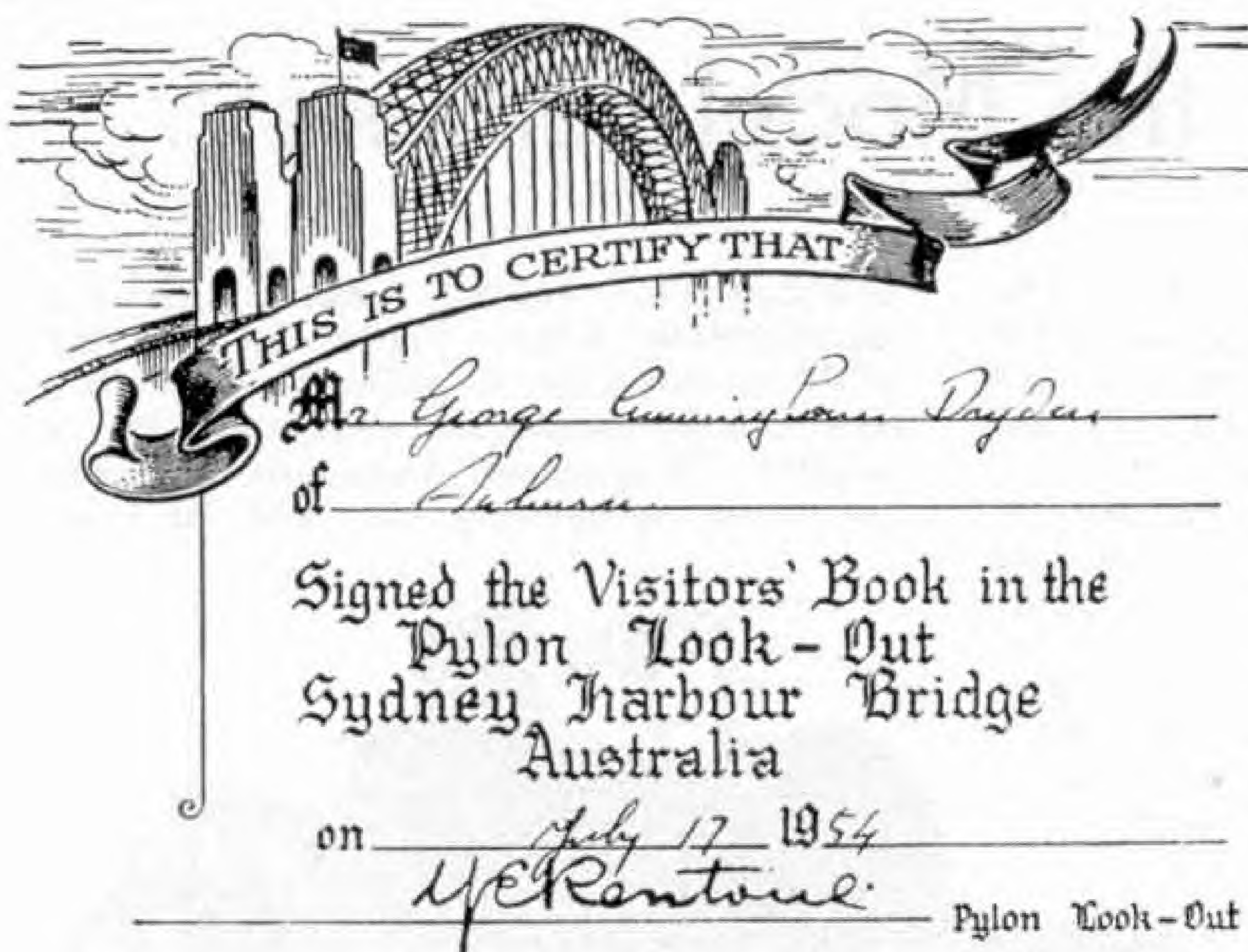
"As we reached the south east pylon we saw a notice reading 'Pylon Lookout.' There we bought tickets and climbed the stairs leading to the floor at the 209 ft.



The southern approach of Sydney Harbour Bridge as seen from the Pylon Lookout. The 57 ft. wide roadway is flanked on each side by two electric railway tracks and a 10 ft. wide footpath.

level. After examining the models and maps of early Australia placed there we signed the Visitors' Book and got commemorative certificates, with a short history of the bridge on the back. We now climbed to the 251 ft. level and on one of the landings of the stairway we saw the Australian Museum, where there were specimens of Australian animals and





both showing a wealth of Australian shrubs that flower without hesitation even at the height of 300 ft. at which the roof garden itself is placed. Dioramas in one of the chambers at the 209 ft. level give a picture of the Dominion, its chief industries and its love of sport, and in another chamber is an exhibit by the Department of Immigration and Information. Banking, aviation and Australian industries are illustrated in these dioramas, together with defence and transport, and on the lighter side the visitor can have his or her photograph taken with an

weapons of the aborigines. On the next landing was the largest map of New South Wales ever built. Its scale is 4 miles to 1 inch.

"When we reached the 251 ft. level we found there a fine double track elevated electric model railway, the largest in Australia, which can be set in operation by visitors themselves. Through special viewers we also saw a unique 'Magic Picture' showing among other things Sydney Harbour Bridge as proposed in 1857 and as it actually is today.

"We then climbed higher, to the parapet lookout, on the 285 ft. level, where we looked at all sides of Sydney. This was our last call before reaching the roof top, about 300 ft. from the ground, where we had a wonderful view all round with the Blue Mountains in the west and the Tasman Sea to the east—a five million acre view. One end of the platform at this height is known as 'Windless Rest Corner.' Visitors who bend a few inches over the 3 ft. concrete parapet feel the powerful winds from the Pacific Ocean, yet a few inches back from there no wind is felt at all, a freak aerodynamic effect."

Pylon Lookout is indeed full of interest. It may be described as a showpiece, but underneath the Australian flag that flies above it there is a picture of Australian history and life. There are two gardens on the bridge, one of them on the roof,

aerial view of the bridge and harbour to provide a background.

The roof top is one of the few places built by man from which those who climb to it can look out unobstructed over an entire circle of vision. Its platform also provides a unique opportunity of looking down upon the vast bridge, and gaining some idea of what has gone into its making. The illustration on this page shows the view from Pylon Lookout of the steelwork of the giant arch of the bridge, and gives some idea of the cross bracing that has to be employed in creating such immense structures as this, weighing thousands of tons and exposed to the full fury of the elements in storms, as well as its immensity.



The view in the opposite direction, from the Pylon Lookout, showing the steelwork of the giant arch of the bridge.



# Among the Model-Builders

By "Spanner"

MANY boys who make their first acquaintance with Meccano while quite young retain their interest in the hobby well into adult life. An excellent example of this came to my notice recently when I received a letter from Mr. A. Zaniboni, Naples, enclosing details and photographs of a powerful model traction engine he had built. The model is shown on this page, and on the opposite page is a picture of Mr. Zaniboni making some adjustments to a Meccano demonstration model of a revolving motor chassis.

Mr. Zaniboni is an instructor in mechanics, and he built the traction engine primarily to demonstrate to his students the use of gearing to increase the effective power of a small motor. Actually the traction engine is sufficiently powerful to haul its builder seated on a small wheeled truck!

I am unable to give details of the actual gearing Mr. Zaniboni used or of the total reduction ratio, but many years ago details of a somewhat similar model driven by a Meccano 6-volt Motor, of a type now obsolete, were published in a special Super Model Leaflet, and in that model reduction gearing giving a ratio of 567:1 was found to provide sufficient power to haul a truck carrying a youth weighing  $7\frac{1}{2}$  stone. Unfortunately supplies of this Leaflet have been exhausted for many years.

I would like to congratulate Mr. Zaniboni on his handiwork, and to express the hope that he will maintain his interest in Meccano for many years to come.

## A Built-up Ball Bearing Unit.

Fig. 2, on this page, shows a neat built-up ball bearing unit that is

Fig. 2. A useful built-up ball bearing unit.

designed to support shafts carrying exceptionally heavy loads. In the May *M.M.* I described a walking device for a mechanical excavator suggested by N. Gottlob, Hjortekaer, Denmark, in which the shaft supporting the walking shoes

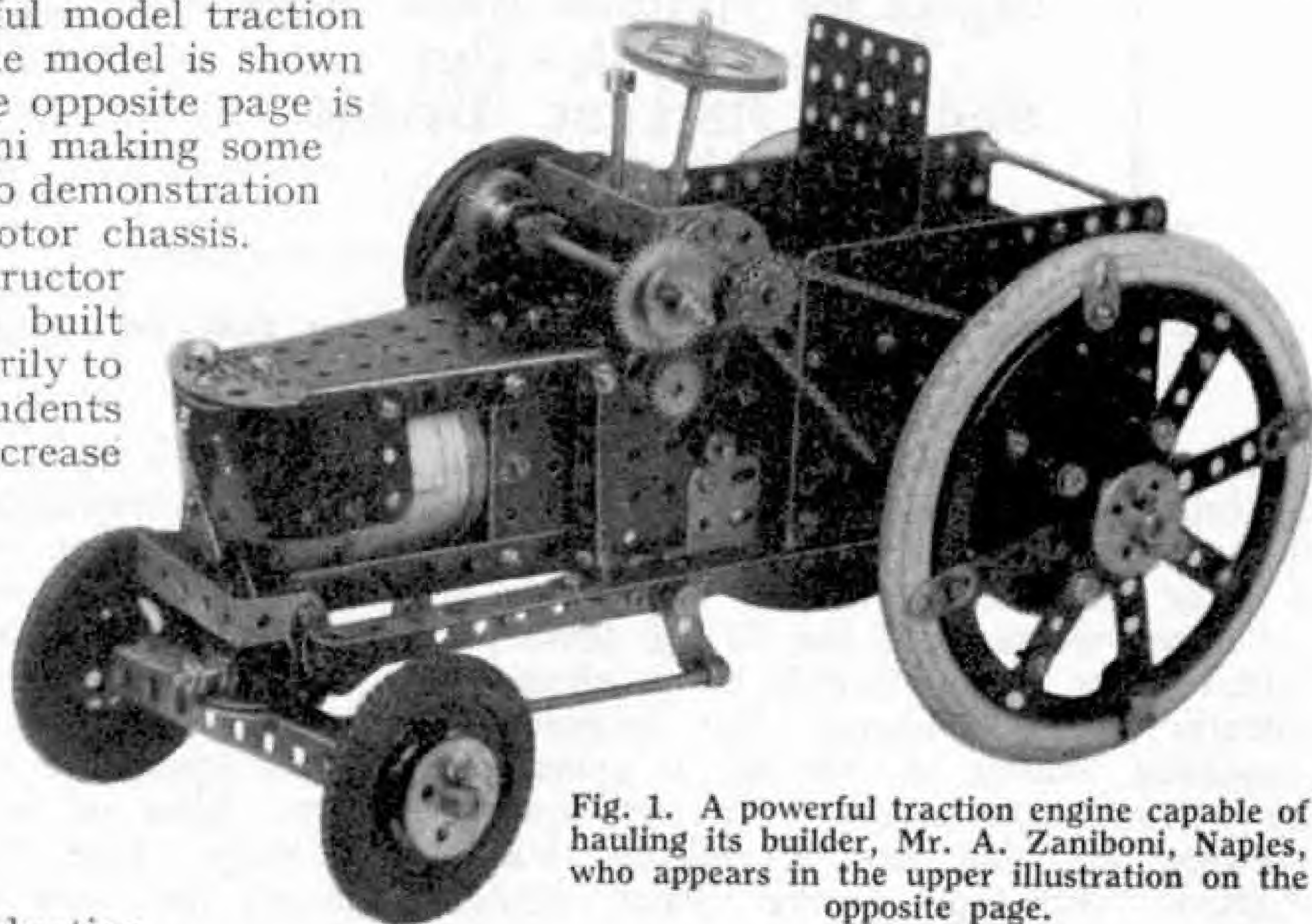
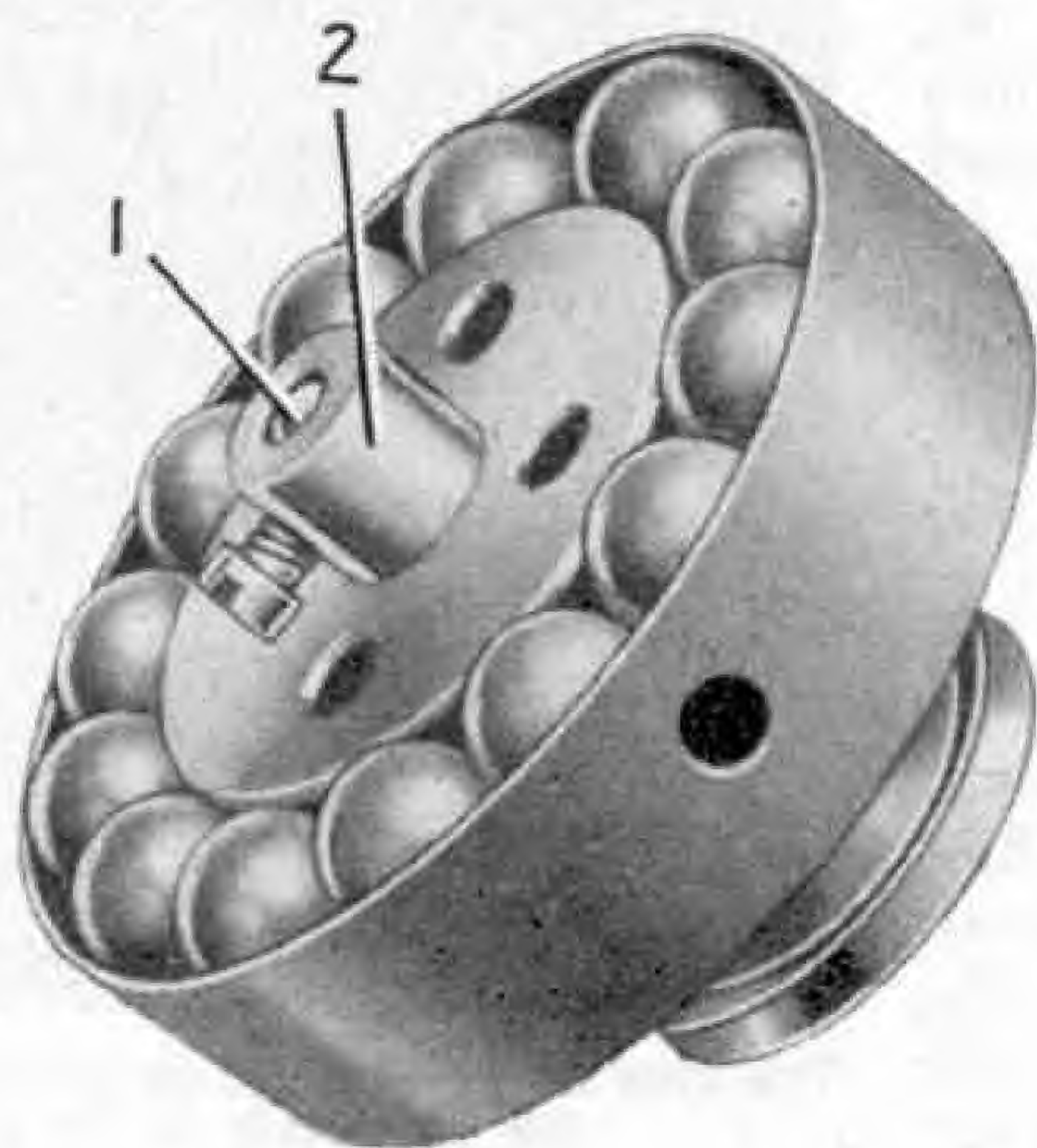


Fig. 1. A powerful traction engine capable of hauling its builder, Mr. A. Zaniboni, Naples, who appears in the upper illustration on the opposite page.

was mounted in ball bearing units, but these assemblies required the use of  $\frac{1}{4}$ " diameter balls. The arrangement shown in Fig. 2 operates on the same principle as Mr. Gottlob's unit, but the balls used are Meccano  $\frac{3}{8}$ " diameter Balls (Part No. 168d).

The outer race of the unit is a Boiler End, and this should be bolted to the frame of the model so that its centre hole passes over the Rod to be supported. In Fig. 2 this Rod is marked 1, and on it are placed a  $1\frac{1}{2}$ " Pulley and a  $1\frac{1}{8}$ " Flanged Wheel. Thirteen  $\frac{3}{8}$ " Balls are placed inside the Boiler End as shown and are located between the rim of the  $1\frac{1}{2}$ " Pulley and the flange of the Flanged Wheel. The Pulley and the Flanged Wheel are fixed on the Rod in such a way that although the





Balls are held in place they are able to roll freely.

### An Unusual Reversing Movement

The mechanism shown in Fig. 4 is an arrangement for reversing the direction of a drive, but it has several novel features, among which is an ingenious device for controlling the movement of the sliding shaft that alters the gear train. This shaft is spring loaded, and the gears are automatically held in mesh when forward or reverse drive is selected by moving the gear lever.

The housing for the mechanism illustrated is made by bolting  $1\frac{1}{2}$ " Flat Girders to the flanges of a  $2\frac{1}{2}$ "  $\times$   $1\frac{1}{2}$ " Flanged Plate. The input shaft 1 is fitted with two  $\frac{1}{2}$ " Pinions, indicated at 2 and 3. The output shaft 4 carries a  $\frac{1}{2}$ " Pinion 5. An intermediate shaft 6 is fitted with a  $\frac{1}{2}$ " Pinion 7 and is supported in 1" Triangular Plates, each of which is passed over the Rod 1 and a sliding Rod 8 mounted in the  $1\frac{1}{2}$ " Flat Girders. Rod 8 carries a  $\frac{1}{2}$ " Pinion 9, and a Compression Spring is placed on it between the Pinion and one of the Flat Girders. A Washer is placed at each end of the Compression Spring and a Collar 10 is fixed on Rod 8.

Fig. 3. Mr. A. Zaniboni, Naples, carrying out minor adjustments on a Meccano revolving motor chassis demonstration model.



Pinion 7 is arranged so that it is in constant mesh with Pinion 2, but it projects slightly to the right of the latter Pinion as shown. Pinion 3 is so fixed on Rod 1 that there is just sufficient space for Pinion 9 to turn between Pinions 7 and 3 without engaging either of them.

Normally the Compression Spring forces Rod 8 to the right and brings Pinion 9 into mesh with Pinion 3, and in this position the right-hand end of Rod 8 must project about  $\frac{1}{8}$ " outside the housing. Further movement of Rod 8 to the right is prevented by the Collar 10. It should be noted that Pinion 9 must remain in mesh with Pinion 5 irrespective of the position of Rod 8.

The setting of the Pinions described in the last paragraph provides forward drive. Reverse drive is obtained by sliding Rod 8 to the left. When this is done Pinion 9 disengages Pinion 3 and moves into mesh with the intermediate Pinion 7. The movement of Rod 8 is controlled by a lever held in a Coupling 11. In Fig. 4, the lever is clear of Rod 8, but when it is moved the Coupling 11 presses the Rod to the left, causing Pinions 7 and 9 to engage.

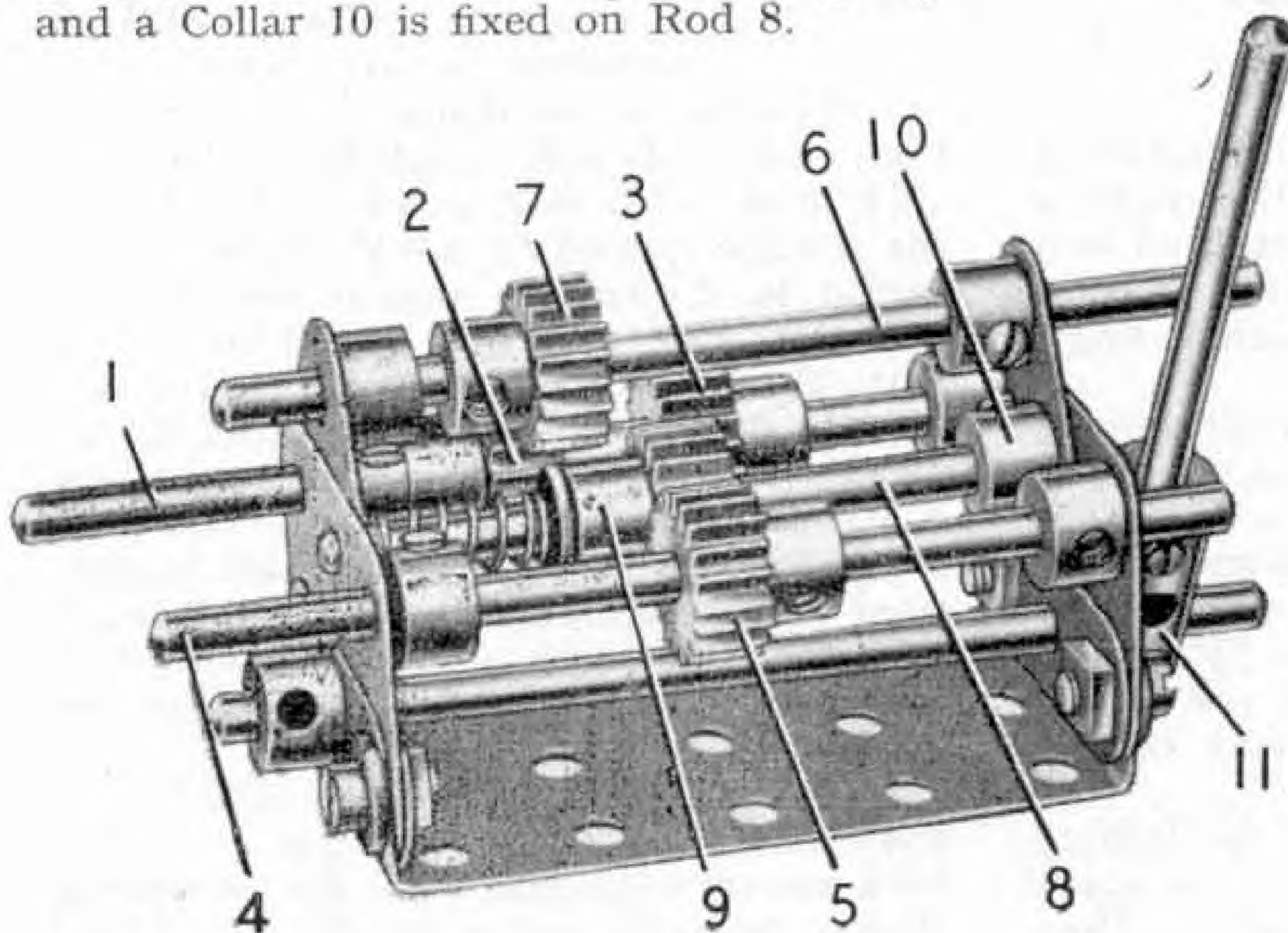


Fig. 4. An unusual type of reversing mechanism. It is described in detail on this page.



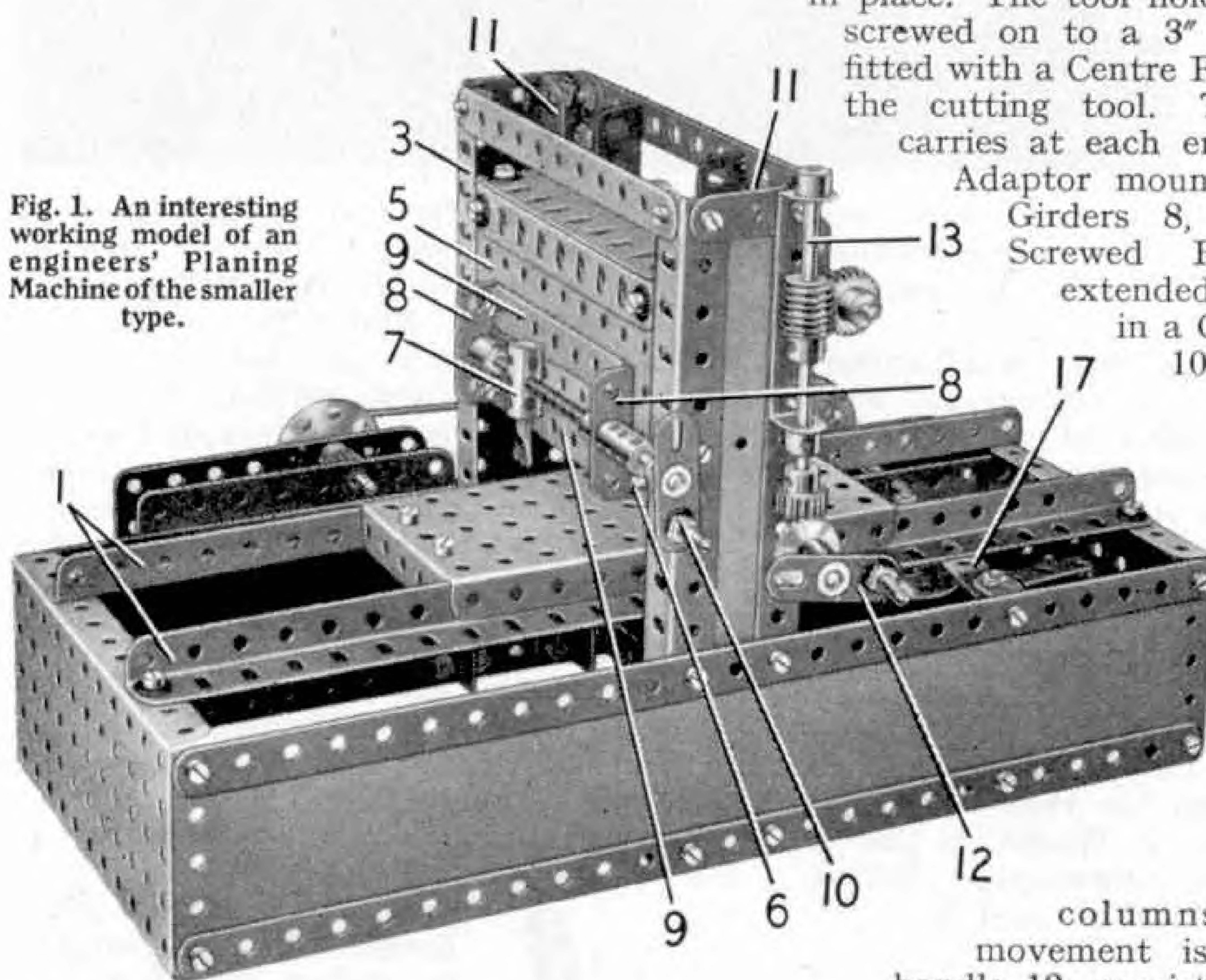
# New Meccano Model

## An Engineers' Planing Machine

THE side of the base of the Planing Machine seen in Fig. 1 consists of a  $12\frac{1}{2} \times 2\frac{1}{2}$ " Strip Plate edged by two  $12\frac{1}{2}$ " Strips. The other side is formed by a  $9\frac{1}{2} \times 2\frac{1}{2}$ " Strip Plate and a  $4\frac{1}{2} \times 2\frac{1}{2}$ " Flat Plate, which are also edged by  $12\frac{1}{2}$ " Strips. The ends are  $5\frac{1}{2} \times 2\frac{1}{2}$ " Flanged Plates bolted between the sides. Two  $12\frac{1}{2}$ " Angle Girders 1 are fixed along the top of the base

the two  $4\frac{1}{2}$ " Girders are connected by a  $4\frac{1}{2}$ " Flat Girder, and the lower edges of the Flat Plates are joined by two  $1\frac{1}{8}$ " Bolts 6, each of which is fixed in place by nuts. A cross-slide for the tool holder 7 is made by bolting two  $1\frac{1}{2}$ " Angle Girders 8 to one of the  $5\frac{1}{2} \times 2\frac{1}{2}$ " Flat Plates, but each bolt used for this purpose is passed through two face-to-face  $3\frac{1}{2}$ " Strips 9 before it is fixed in place. The tool holder 7 is a Coupling screwed on to a 3" Screwed Rod and fitted with a Centre Fork that represents the cutting tool. The Screwed Rod carries at each end a Screwed Rod

Fig. 1. An interesting working model of an engineers' Planing Machine of the smaller type.



and they form guides for the reciprocating worktable. At one end of the base a  $3\frac{1}{2} \times 2\frac{1}{2}$ " Flanged Plate 2 is attached and is connected to the  $4\frac{1}{2} \times 2\frac{1}{2}$ " Flat Plate of the side by two  $1\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strips.

Each of the vertical columns that support the adjustable tool carriage consists of two  $7\frac{1}{2}$ " Angle Girders 3 with a  $5\frac{1}{2} \times 1\frac{1}{2}$ " Flexible Plate and a  $1\frac{1}{2}$ " Strip bolted between them. The upper ends of the columns are connected by two  $5\frac{1}{2}$ " Strips, and two further  $5\frac{1}{2}$ " Strips 4 are bolted between the lower ends of two of the Girders.

The tool carriage 5 is made by bolting  $4\frac{1}{2}$ " Angle Girders centrally along the upper edges of two  $5\frac{1}{2} \times 2\frac{1}{2}$ " Flat Plates. Then

Adaptor mounted in one of the Girders 8, and one of the Screwed Rod Adaptors is extended by a 1" Rod held in a Coupling. A handle

10 on the 1" Rod consists of a Double Arm Crank fitted with a Threaded Pin.

The tool carriage 5 is free to slide vertically up or down the supporting columns. It is guided by two  $4\frac{1}{2}$ " Angle Girders 11 bolted to the inner faces of the

columns. The vertical movement is controlled by a

handle 12, consisting of a Threaded Pin in a Double Arm Crank that is fixed on a  $2\frac{1}{2}$ " Rod. This Rod is mounted in one of the Girders 3 and in a  $1\frac{1}{2}$ " Angle Girder bolted to it (Fig. 2), and it carries a  $\frac{3}{4}$ " Contrate that drives a  $\frac{1}{2}$ " Pinion on a vertical Rod 13. Rod 13 is supported in a  $2\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strip bolted to the column, and is held in place by Collars. A Worm on Rod 13 engages a  $\frac{3}{4}$ " Pinion on a  $6\frac{1}{2}$ " Rod mounted in  $1\frac{1}{2}$ " Angle Girders fixed to the columns. The  $6\frac{1}{2}$ " Rod is fitted with two  $\frac{1}{2}$ " Pinions, and these mesh with  $3\frac{1}{2}$ " Rack Strips attached by Angle Brackets to the back of the tool carriage.

A No. 1 Clockwork Motor is attached to the base by  $\frac{3}{8}$ " Bolts, but is spaced from it by a nut on each Bolt. The Motor driving shaft is removed and replaced by a 2" Rod



that carries a made-up pulley consisting of a Wheel Disc and a  $\frac{3}{4}$ " Flanged Wheel. The Wheel Disc is spaced from the Motor side-plate by two Washers, and the pulley is connected by a Driving Band to another made-up pulley on a Rod 14. The second pulley consists of two  $1\frac{1}{8}$ " Flanged Wheels, and Rod 14 is mounted in the side of the base and in the Flanged Plate 2. A  $\frac{7}{16}$ " Pinion on Rod 14 drives a 60-tooth Gear on a 2" Rod, and a  $\frac{1}{2}$ " Pinion on the latter Rod engages a 57-tooth Gear on a Rod fitted with a  $\frac{3}{4}$ " Pinion 15. The last-mentioned Rod is mounted in Flanged Plate 2 and in a Double Bent Strip bolted to it.

The table that carries the work to be machined is a  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flanged Plate that slides freely on the Angle Girders 1. A Double Bent Strip is fixed underneath the table, and to this is lock-nutted one end of a made-up strip 16. Strip 16 consists of two  $5\frac{1}{2}$ " and two  $2\frac{1}{2}$ " Strips, overlapped as shown to make a 7" strip of double thickness, and its other end is lock-nutted to a  $3\frac{1}{2}$ " Strip 17. Strip 17 slides freely in a Slide Piece 18, and it is lock-nutted to one lug of a  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strip bolted to the side of the base. The Slide Piece is fixed on a  $\frac{3}{8}$ " Bolt that pivots in a hole in a Bush Wheel 19. The latter is fixed on a Rod fitted with a  $1\frac{1}{2}$ " Contrate 20 that meshes with the Pinion 15. The Rod is mounted in two  $5\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips bolted between one end of the base

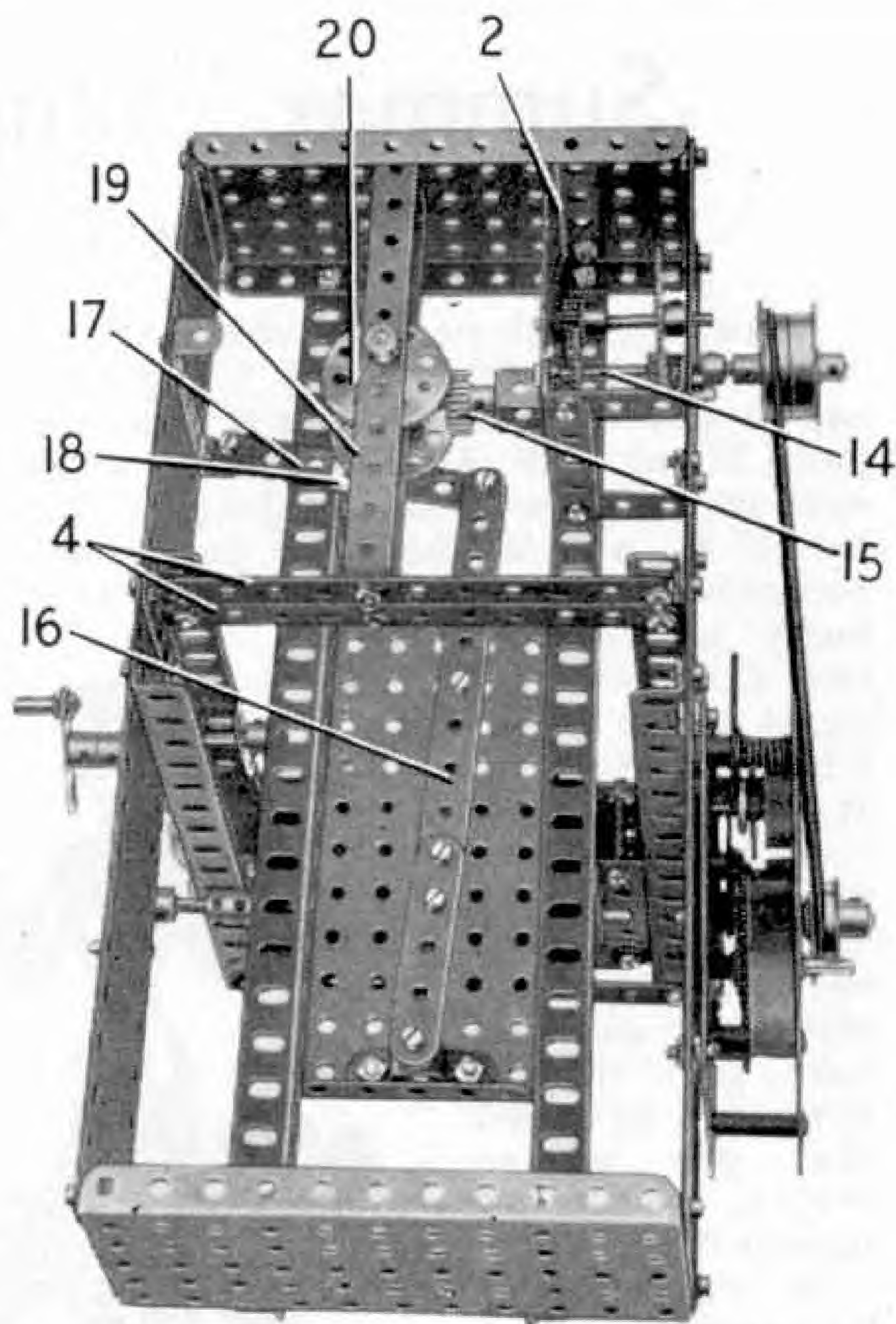


Fig. 3. A view of the quick-return mechanism located under the worktable of the Planing Machine.

and the Strips 4. This arrangement provides an automatic quick return stroke for the work table.

Parts required to build the Planing Machine: 4 of No. 1; 6 of No. 2; 5 of No. 3; 2 of No. 5; 2 of No. 6a; 2 of No. 8; 4 of No. 8b; 4 of No. 9a; 5 of No. 9f; 4 of No. 12; 1 of No. 14; 3 of No. 16; 1 of No. 16a; 3 of No. 17; 1 of No. 18b; 2 of No. 20; 1 of No. 20b; 1 of No. 24; 1 of No. 24a; 2 of No. 25; 4 of No. 26; 1 of No. 26c; 1 of No. 27; 1 of No. 27d; 1 of No. 28; 1 of No. 29; 1 of No. 32; 104 of No. 37a; 85 of No. 37b; 30 of No. 38; 2 of No. 45; 2 of No. 48; 2 of No. 48a; 2 of No. 48d; 1 of No. 50; 3 of No. 52; 1 of No. 53; 1 of No. 53a; 7 of No. 59; 2 of No. 62b; 2 of No. 63; 1 of No. 65; 2 of No. 70; 1 of No. 80a; 1 of No. 103c; 2 of No. 110; 7 of No. 111c; 2 of No. 111d; 2 of No. 115; 2 of No. 173a; 1 of No. 186d; 2 of No. 189; 1 of No. 196; 1 of No. 197; 1 No. 1 Clockwork Motor.

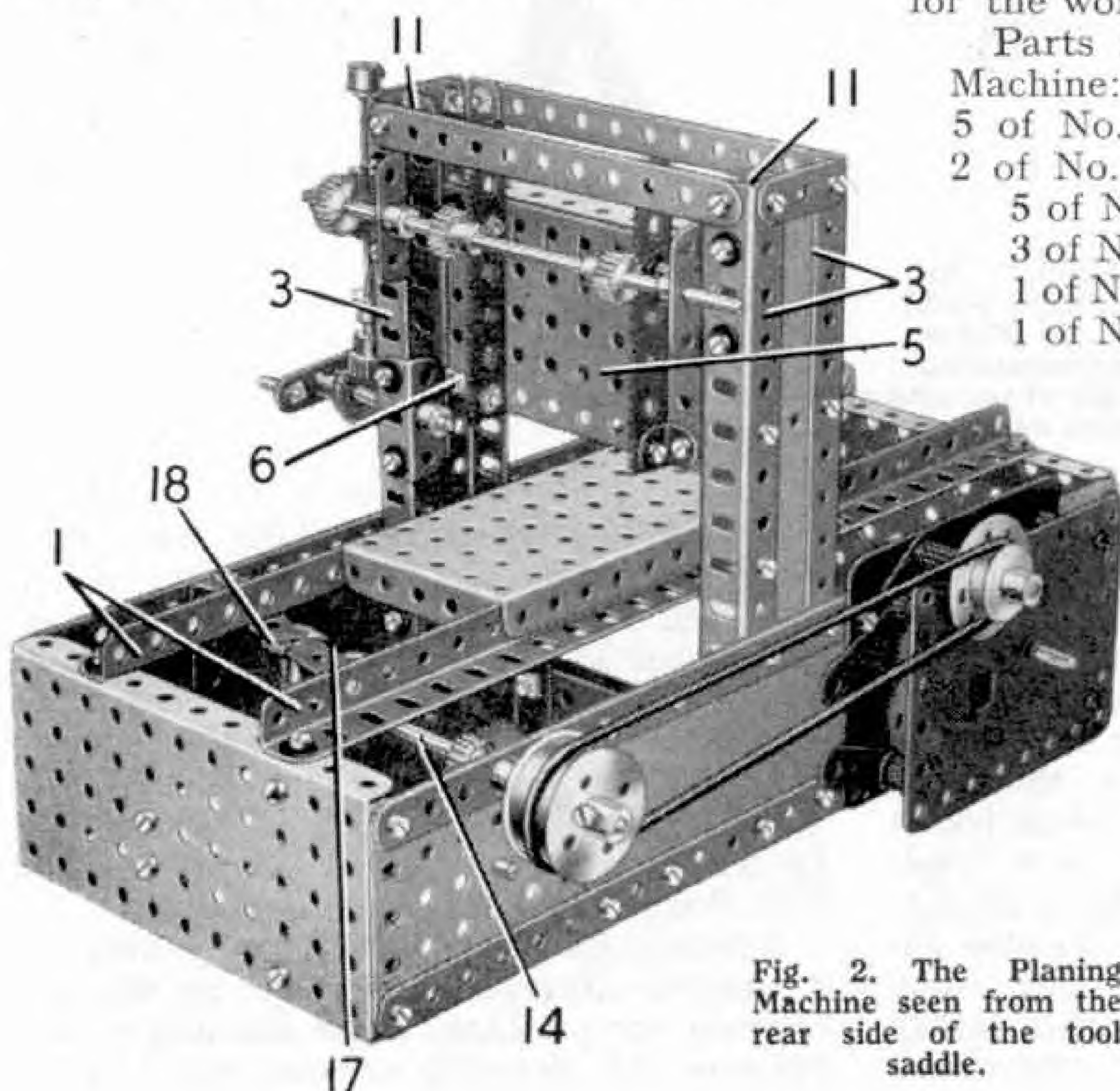


Fig. 2. The Planing Machine seen from the rear side of the tool saddle.



# Summer "Simplicity" Contest

## Prizes for Small Models

Have you sent in your entry for the "Simplicity" Model-Building Competition and so made sure of a chance to win a fine Cash Prize? Full details of this Contest were given in the June and July issues of the *M.M.* and if you have not already completed your entry you will have to hurry up, because the Competition closes at the end of this month. However, as "Simplicity" model-building is very easy and does not take up much time, you can still take part in the Contest, provided that you set to work without further delay.

In entering this Competition you have to try to build a realistic model using the smallest possible number of parts. Now this is great fun, and if you have never tried it you can have no idea of the jolly times it provides and the amazingly real effects that can be obtained.

This is what we call "Simplicity" model-building, and you will see from the illustration on this page the kind of thing we have in mind. You will find that there is plenty of scope for you to exercise your skill and almost no limit to the number of subjects, humorous or otherwise, that you can model in this way. First select some simple subject, it can be of any kind whatever, and then try to make a simple model of it using the smallest number of Meccano parts that you can. You may use any parts you like from the entire Meccano range, but you should remember

that the important thing is to use the fewest possible without spoiling the realism of the finished model.

When you have made your model, and it need not take more than a few minutes, make a good sketch of it, or obtain a photograph, and send this to "Simplicity Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13." Please don't

forget to write your age, name and address on the back of the sketch or photograph, or all your effort will be wasted. Entries will be accepted from readers of all ages living in any part of the world, and may be sent in at any time up to 31st August next.

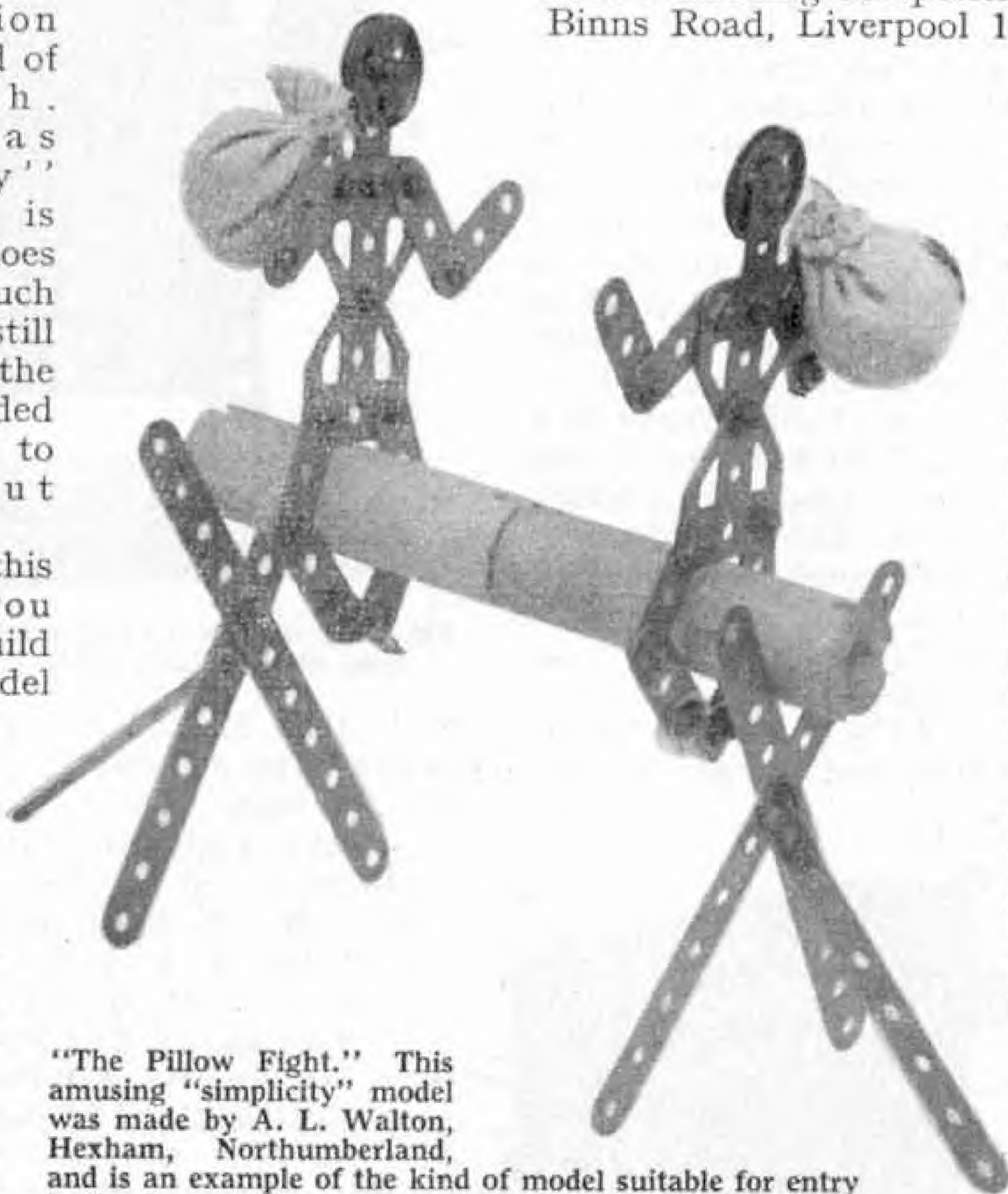
If you wish to send in more than one entry you may do so, but we must mention that no single competitor will be awarded more than one prize.

If you will be under 12

years of age on 31st August next your entries will be placed in Section A. If you will be 12 or over on 31st August then your entries will go into Section B.

The following set of prizes will be awarded in each Section. First, Cheque for £4/4/-; Second, Cheque for £3/3/-; Third, Cheque for £2/2/-. There will be also Five Prizes each of £1/1/- and Ten Prizes of 10/6 in each Section.

Unsuccessful entries will be returned if a suitable stamped addressed envelope is sent for the purpose. Prize-winning entries become the property of Meccano Ltd.



"The Pillow Fight." This amusing "simplicity" model was made by A. L. Walton, Hexham, Northumberland, and is an example of the kind of model suitable for entry in the Competition announced on this page.





# Club and Branch News



## WITH THE SECRETARY

### SHOP WINDOW DISPLAYS

Club reports summarised on this page this month include another instance of a Club having been able to arrange for their outstanding models to be displayed regularly in a local shop window. This is a most valuable form of publicity, as it brings the Club and its activities constantly to the notice of the public. It also benefits the shop concerned, as in viewing the models displayed the passers-by see also the other contents of the window. This is a point to emphasise when seeking the co-operation of a local Meccano dealer or other friendly shop-keeper.

I commend this method of making a Club better known, to all Leaders of Clubs needing more members, who have not hitherto considered the idea.

### CLUB NOTES

**STRENSALL (YORK) M.C.**—The Club now have a "Stores Section," and members no longer have to carry their Outfits from home on model-building nights. Exhibition models built have included one of the aircraft carrier *Theseus*, 6 ft. 6 in. long, and a swing bridge designed by the Junior section. Outstanding models built by the Club are displayed in the window of the local Co-operative store by kind permission of the Manager. Club roll: 12. *Secretary*: J. Nurse, 73 Northfields, Strensall, near York.

**NEWTOWN SCHOOL (WATERFORD) M.C.**—The Exhibition held last Whitsuntide was a great success. A fine model of a lifting bridge won the first prize. A picnic excursion to Tramore, a seaside resort eight miles from Waterford, was much enjoyed. A few members of the party went by train, and the remainder cycled. Club roll: 11. *Secretary*: F. Trench, Blue School, Drogheda, Co. Louth, Eire.

**EXETER M.C.**—Model-building has continued as vigorously as ever, and among excellent models completed have been various types of large cranes, a safe and a road-sweeper lorry. Indoor games,

including billiards for the older members, are very popular. Club roll: 20. *Secretary*: C. Willis, 23 Hanover Road, Heavitree, Exeter.

**CONSETT AND DISTRICT Y.M.C.A. M.C.**—The Club continues to make good progress. The model blast furnace has been completed. The new layout also is complete except for the scenic background for the corners. A Loco Spotters group has been formed, and some local "spotting" trips organised. On a recent Saturday several members went hiking through Dipton Woods, accompanied by the Club President and the Leader. Club roll: 35. *Secretary*: Mr. B. Ward, 10 Cyril Street, Number One, Consett, Co. Durham.

### NEW ZEALAND

**CHRISTCHURCH (N.Z.) M.C.**—The Club display at the New Zealand Industries Fair included a fine array of large models. Printed leaflets distributed to visitors gave brief notes about the models and their builders. *President*: Mr. C. E. Saunders, 5 Walsall Street, Riccarton, W.W.1, Christchurch, New Zealand.

### BRANCH NEWS

**ABBNEYFIELD ROAD (SHEFFIELD)**—Plans are being made for an outing to York. At one meeting members brought their own locomotives, and some excellent train running was carried out. *Secretary*: R. North, 132 Abbeyfield Road, Sheffield 4.

**HALE END (LONDON)**—The new baseboard has been completed, and members are now able to enjoy track operations. At present the Branch owns only a small amount of track, so members bring their own rails to supplement the stock. At some meetings the time is spent in constructing scenic accessories for the layout. *Secretary*: A. Coe, 463 Hale End Road, Highams Park, London E.4.

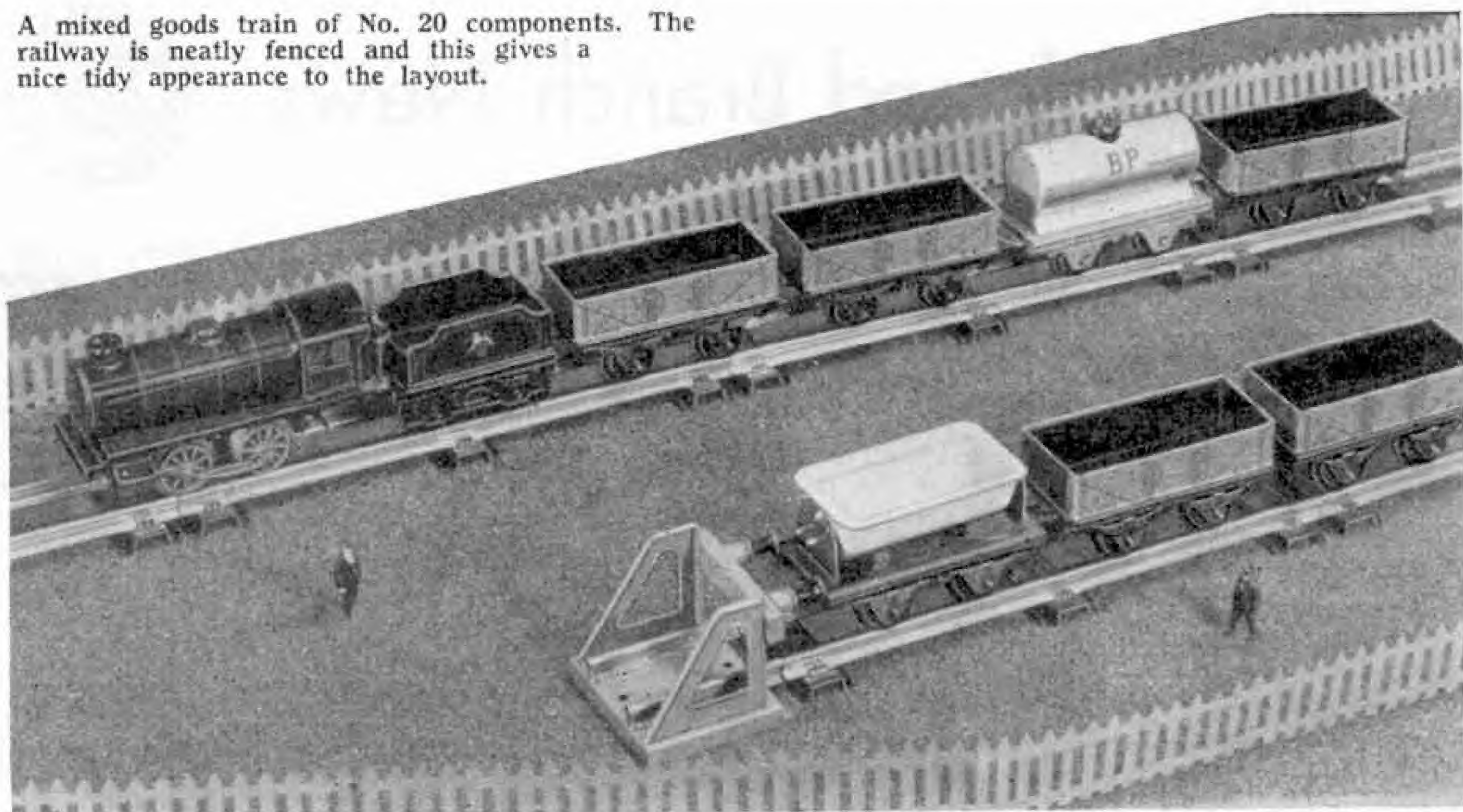
**DROYLSDEN COUNTY SECONDARY SCHOOL**—An outing to York was much enjoyed, in spite of wet weather. Additional rolling stock for the Branch layout has been bought. *Secretary*: Mr. J. Lawton, Droylsden County Secondary School, Manor Road, Droylsden.

Mr. B. Tunbridge, Leader of the Launceston M.C. has an interested audience as he adjusts a locomotive tender on the fine Hornby-Dublo display staged by this Club at their recent Hobbies Exhibition. Affiliated with the Meccano Guild in March last year, this Club has made great strides and already has a membership of sixty. The photograph was taken by Mr. Bawden, Assistant Leader.





A mixed goods train of No. 20 components. The railway is neatly fenced and this gives a nice tidy appearance to the layout.



AS you will have noticed earlier in this issue, the usual model railway talk in the Junior *M.M.* pages is by the H.R.C. Secretary. So here I am on a different page this month although this talk, contrary to what you may expect from the title below, has nothing to do with cricket. It is concerned literally with the boundaries or outer edges of a miniature railway system. A layout must have an edge somewhere, especially if it is arranged on a baseboard, but how to finish it off effectively if the miniature ground is not to come to a sudden stop, as it were, is a problem that faces all railway layout owners.

Of course a layout can hardly be boxed in completely on all sides by walls, scenic backgrounds and so on, or one would never be able to get a decent view across the system at a natural level. Therefore many Hornby-Dublo owners favour the scheme of leaving completely bare the edge of the baseboard facing the operator. There is something to be said for this, but the system will look much better if instead of the plain edge of the board one looks at the railway over a low wall or line of fencing. There is no need for me to tell you how to make these, and the course of this first boundary will depend to a certain extent on the arrangement of the layout and the situation of the Controllers, Switches and so on.

Although I have mentioned only fencing or walls, don't forget that a miniature hedge

forms a most effective means of lining the right of way. I do not need to tell you how to make this either, as my friend "*The Toyman*" has already done so in his article last month. But keep your steel wool hedges well away from the track, because bits of them may find their way near the engines—and Hornby-Dublo engines have very powerful magnets.

A certain amount of background does help to finish off the general railway scene effectively. It is surprising what a difference such an addition makes, even to a railway that is put down just for the time being on the floor. Even a length of thick cardboard suitably decorated to make a back scene

will help matters and on a floor layout it can always be propped against a couple of chair legs or something similar, if there is no other way of supporting it. On a permanent railway that follows the walls of a room

there will be no difficulty in arranging for the support of such a background. If no suitable board of the card variety is available, hardboard or plywood will do as the basic material for the back scene.

The manner in which the scenery is produced will depend a good deal on the layout owner and his ability to do a bit of drawing and painting. As a rule it is not difficult to enlist the aid of a member of the family or a friend who is skilled in this direction, if the railway owner himself does not feel up to the job. There is nothing like trying, however, and even

## Boundaries

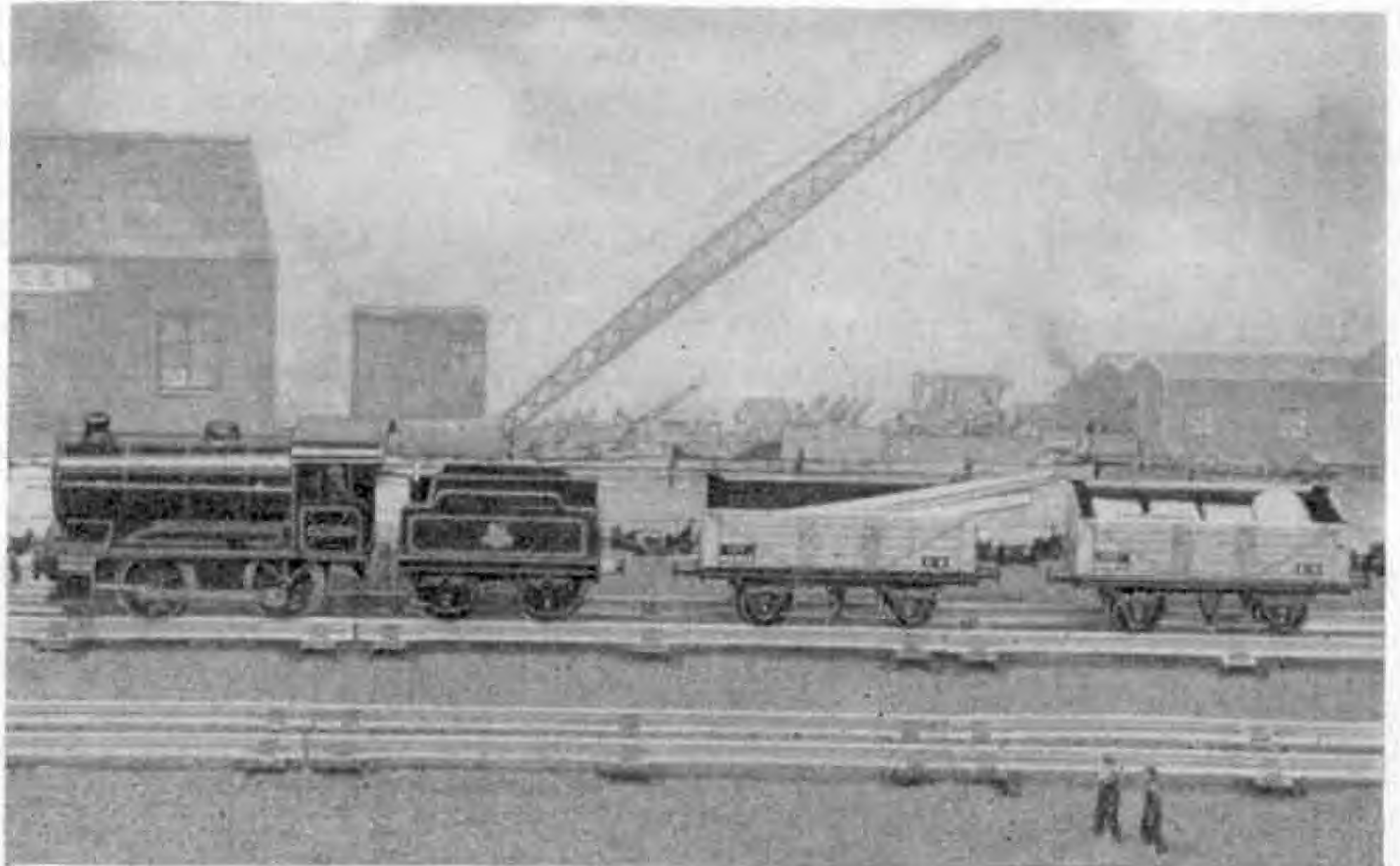
By "Tommy Dodd"



if the first attempt is not a big success one can always have another go. If the scene is prepared on a length of plain paper, which can afterwards be attached to the baseboard, several different kinds of scenes can be tried.

A point to consider is the type of scene we require and here the arrangement of the layout itself has to

A Hornby goods train on a loop line alongside a stretch of simple home-made scenery. The buildings and the scrap yard were drawn on plain paper.

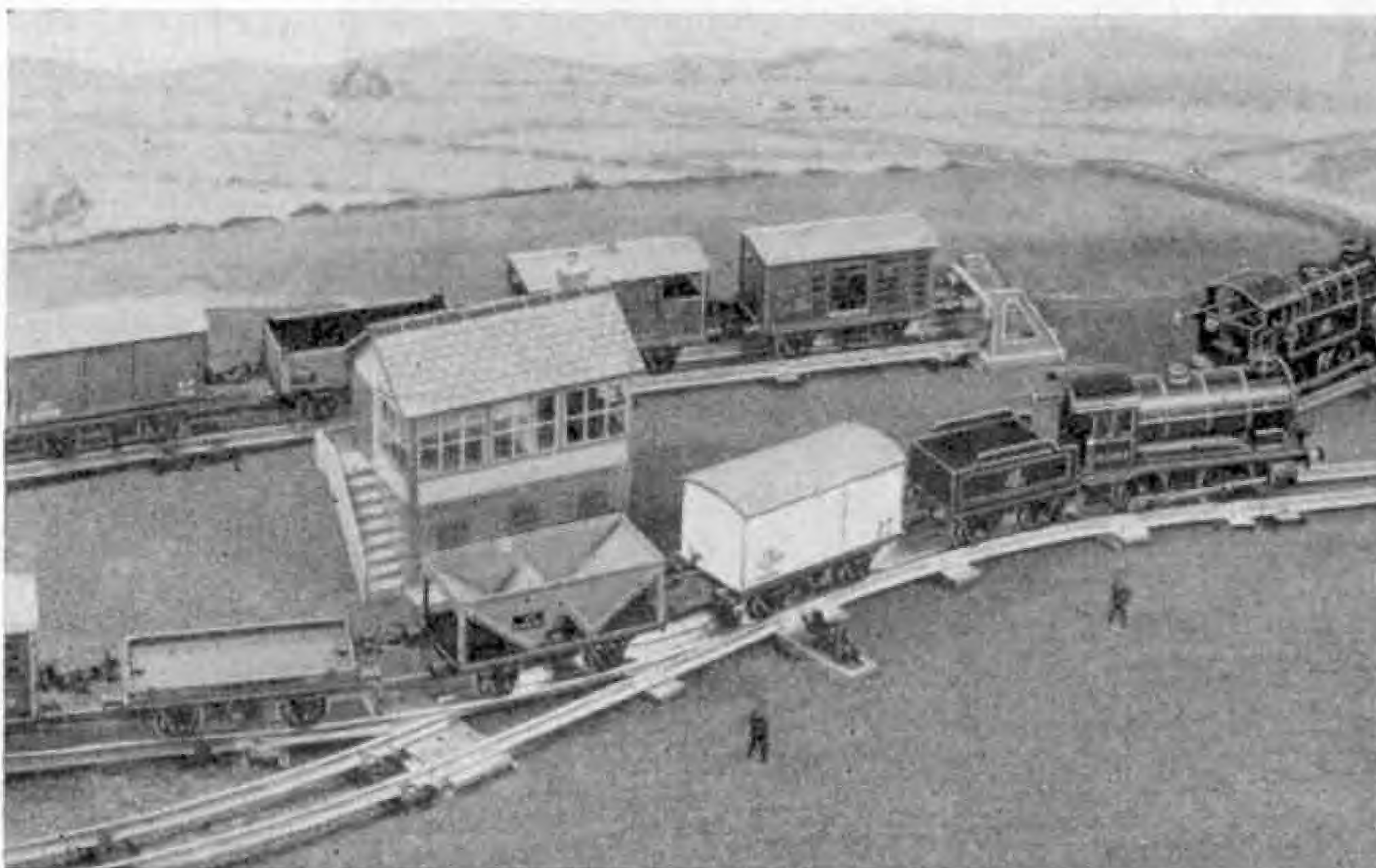


be borne in mind. Some may prefer a more or less industrial scene, especially if the railway is supposed to serve a busy area with plenty of sidings for Coal Wagons, Petrol Tanks and so on. On the whole probably most readers will prefer something more countrified and here it is often possible to make use of pictures, coloured illustrations and other views as a guide to different features. With a good deal of patience and ingenuity it is sometimes possible to prepare a paste-up type of background by using parts of countryside scenes taken from magazine covers and other sources.

If carefully done this sort of thing can be quite pleasing, although matching the individual sections sometimes presents one or two difficulties. Some problems can be overcome by cutting out just the silhouette of features such as trees or

buildings from one picture and grafting them on to another, or perhaps by carrying out the whole job in this way, using a common background for the various cuttings.

When this is done a good material for the background is a length of plain blue wallpaper, of a fairly light shade. This will give the required sky effect without further effort on the part of the railway owner, but the keen worker can touch in a few clouds by the careful use of chalk.



A good effect is obtained by the painted background in this picture. General effect rather than detail is the secret of success.



# Hornby-Dublo Sidings and Yards

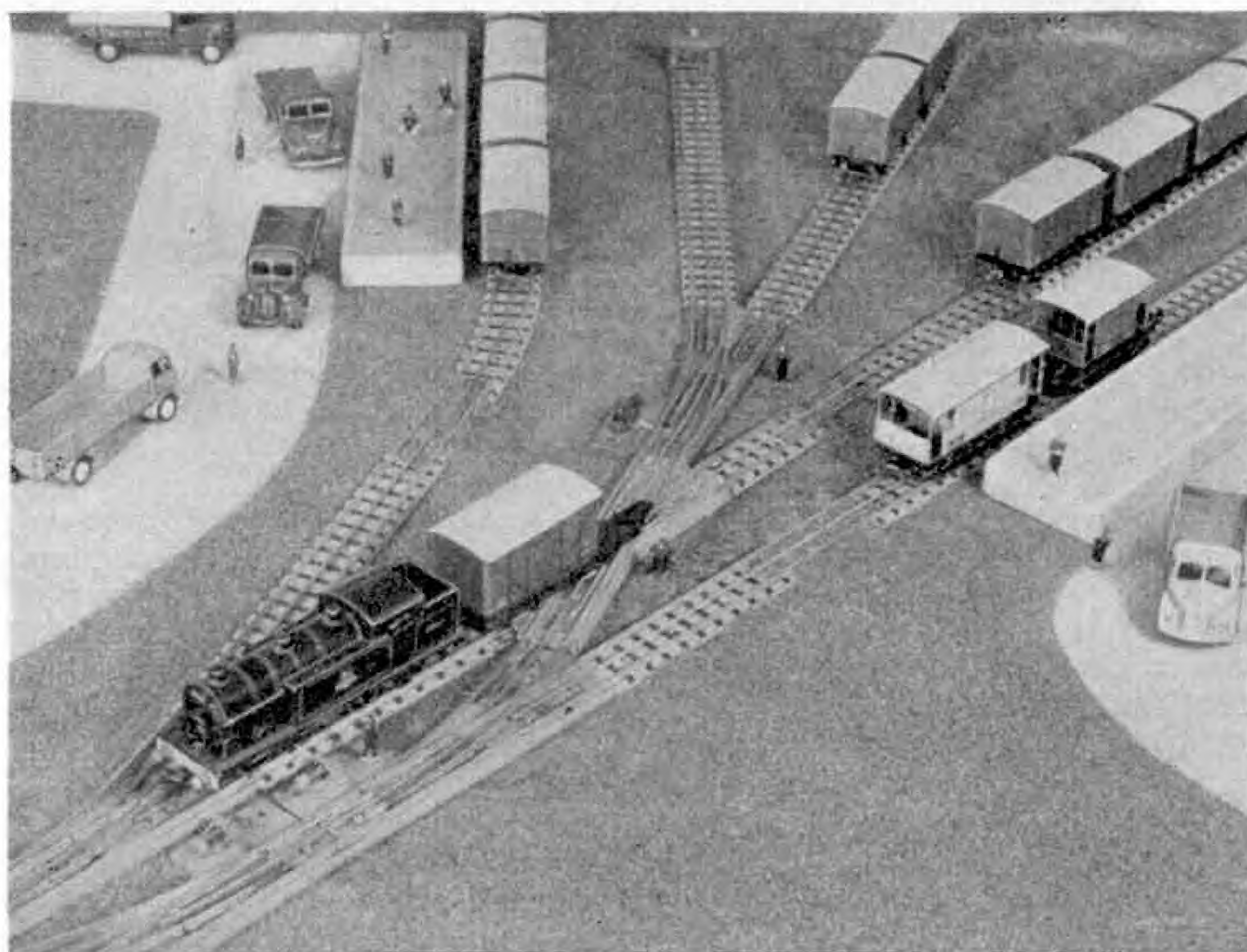
AS a layout develops, and further rolling stock is added, the owner of a system has to consider where to keep the additional vehicles when they are not actually running. This may become quite important the further the system grows up, because it is but rarely that the vehicles that one has are all running at the same time. We build up a stock of Coal Wagons, for instance, or perhaps a train of Vans or even Tank Wagons. These frequently remain coupled as block units for special traffic.

So a railway needs sidings, perhaps only

considerably to the pleasure of running the line. Some roads may be reserved for particular traffic, or simply for storage purposes; others will be devoted more to the general yard work involved in making up trains or in breaking them up again in order to change their formation.

The Hornby-Dublo Uncoupling Rail is essential where this type of work is a special feature of the line, and it is a definite asset to have several of these rails of the Electrically Operated kind, although quite satisfactory work is possible with the

corresponding hand-operated component. With the latter of course the "shunter" must remem-



A yard layout with plenty of accommodation for rail and road vehicles. The loading banks or platforms can readily be made from wood or card.

ber to work the hand lever to return the uncoupling ramp to its normal position after

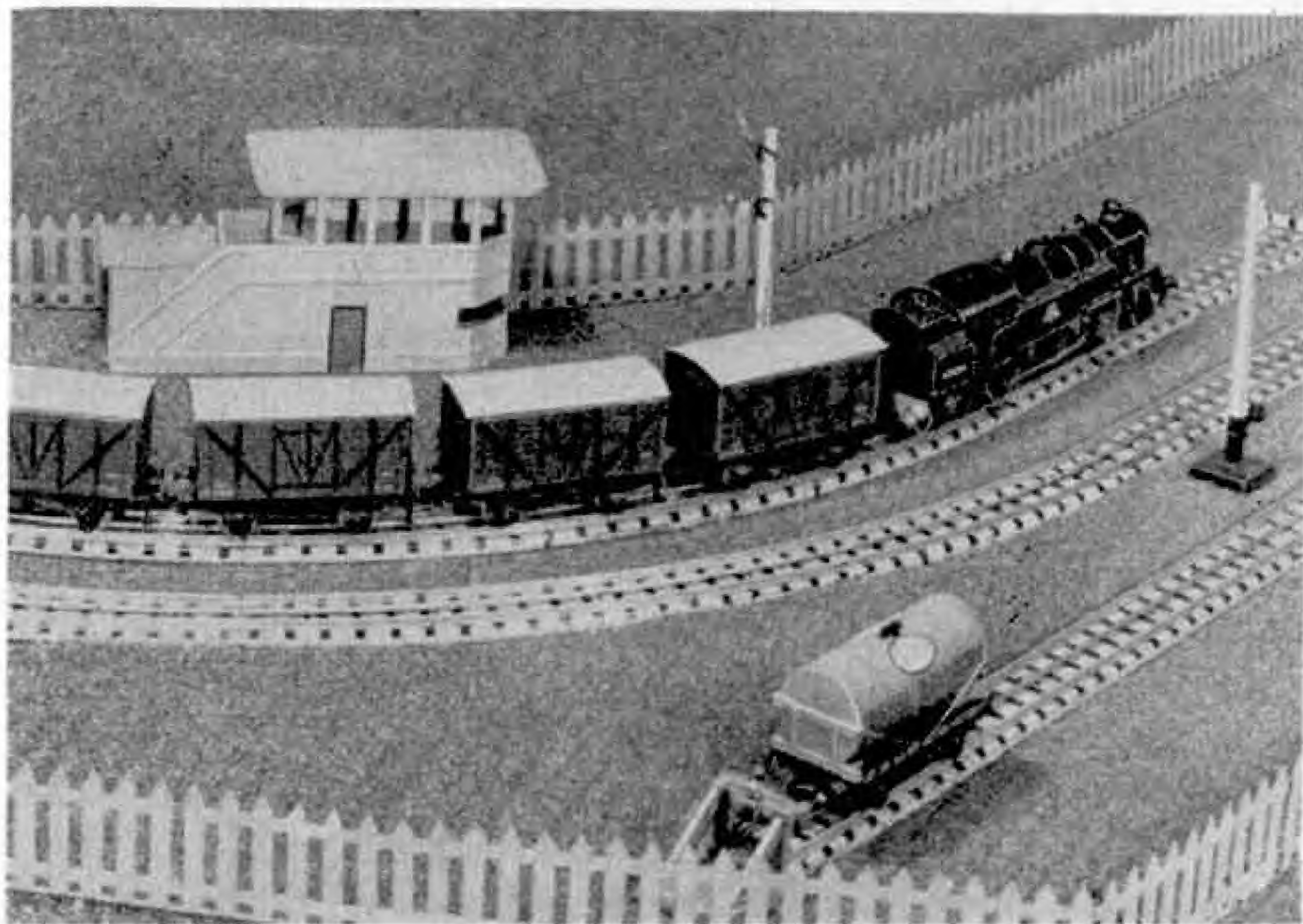
one of them at first, but by degrees the miniature railwayman finds it necessary to develop the single siding into a more extensive yard. A favourite place for such developments in the average continuous system is within the main oval track, this usually being necessary because of space considerations. On the other hand layouts that follow irregular shapes, possibly because of the form of the room in which they are laid down, can sometimes have such features as terminal stations and yards outside the main tracks.

Whichever scheme is followed a well-planned system of sidings adds

it has been used. With the Electrically-Operated Rail this is not necessary, because the ramp only remains in action while the operator's finger is on the press-button Switch that works it.

Sidings and yards lead us to think about the buildings or other equipment necessary for the handling of goods traffic and most Hornby-Dublo owners are happy to work out their own ideas in this direction. Sometimes a covered warehouse type of building is preferred. This can be quite simple in its general style and, as the vehicles are dealt with inside it, there is no desperate need to bother about internal





A fast freight train swings round the curve behind the Hornby-Dublo 2-6-4 Tank Locomotive. The near corner is filled by a simple siding.

it is not difficult to build up a suitable goods loading bank, and here again either wood or card construction comes in. All sorts of jolly schemes can be worked out by the enthusiast, even if the space he has to work in is somewhat cramped. Width rather than length is desirable, although it is better still if one can have both, because space is needed for the loading

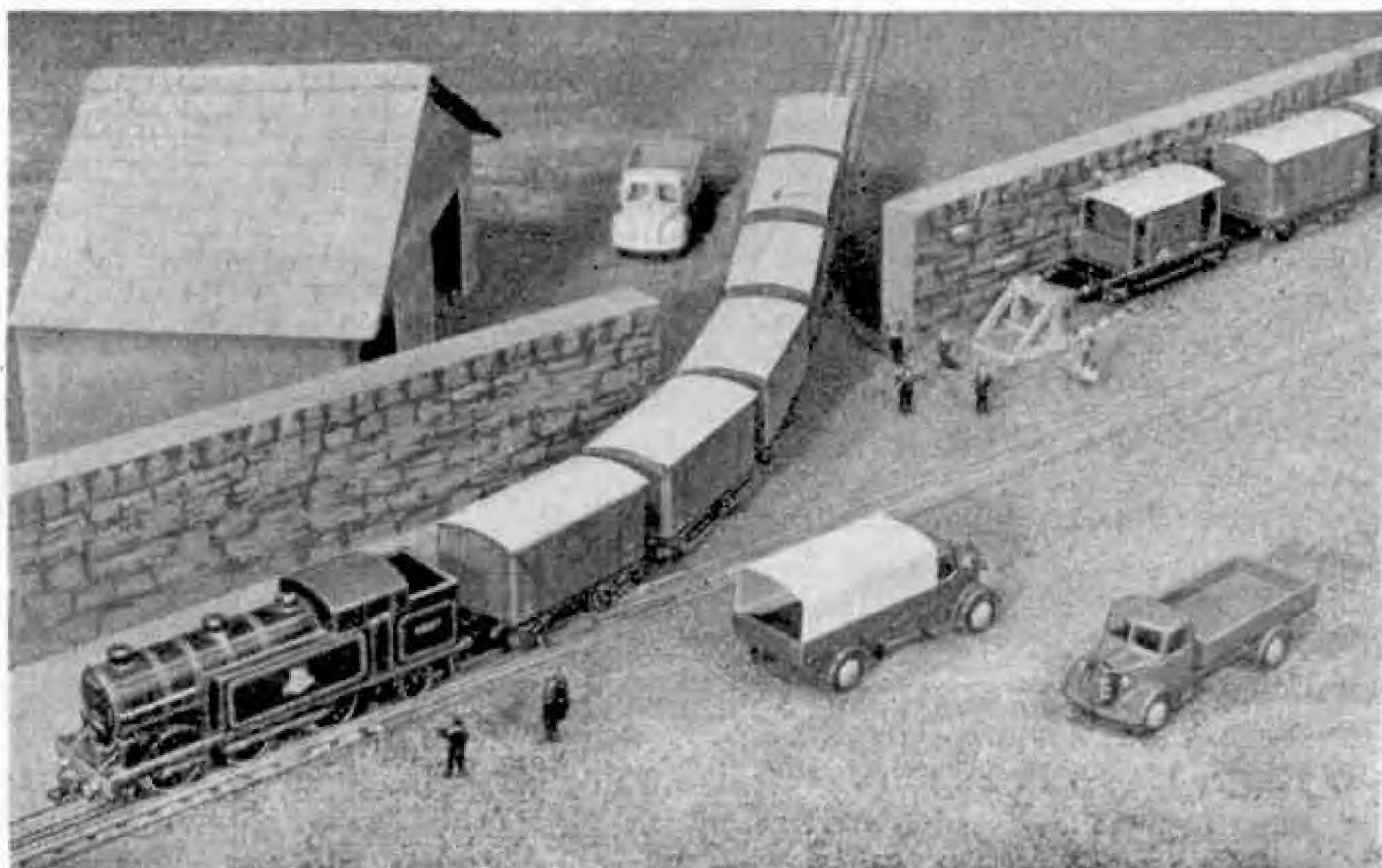
detail. Wood or card construction can be used, or a combination of both. Where the owner has no special ideas of his own on the subject, he can always use one of the various kits for this type of building that are to be had at many hobby shops nowadays.

Some Hornby-Dublo owners use the ordinary Island Platform quite successfully as the centre piece of a goods yard. The platform provides the necessary "deck" for the handling and transferring of goods and the buildings serve as office or other premises. The fact that the roof covers part of the platform will certainly be appreciated by the miniature figures whom we have to employ as goods station staff—but that doesn't mean introducing "rain" as a scenic accessory!

Where the open type of loading bank is preferred, perhaps because the operator can see all that is going on there, the Platform Extension of the island type can be useful. On the other hand

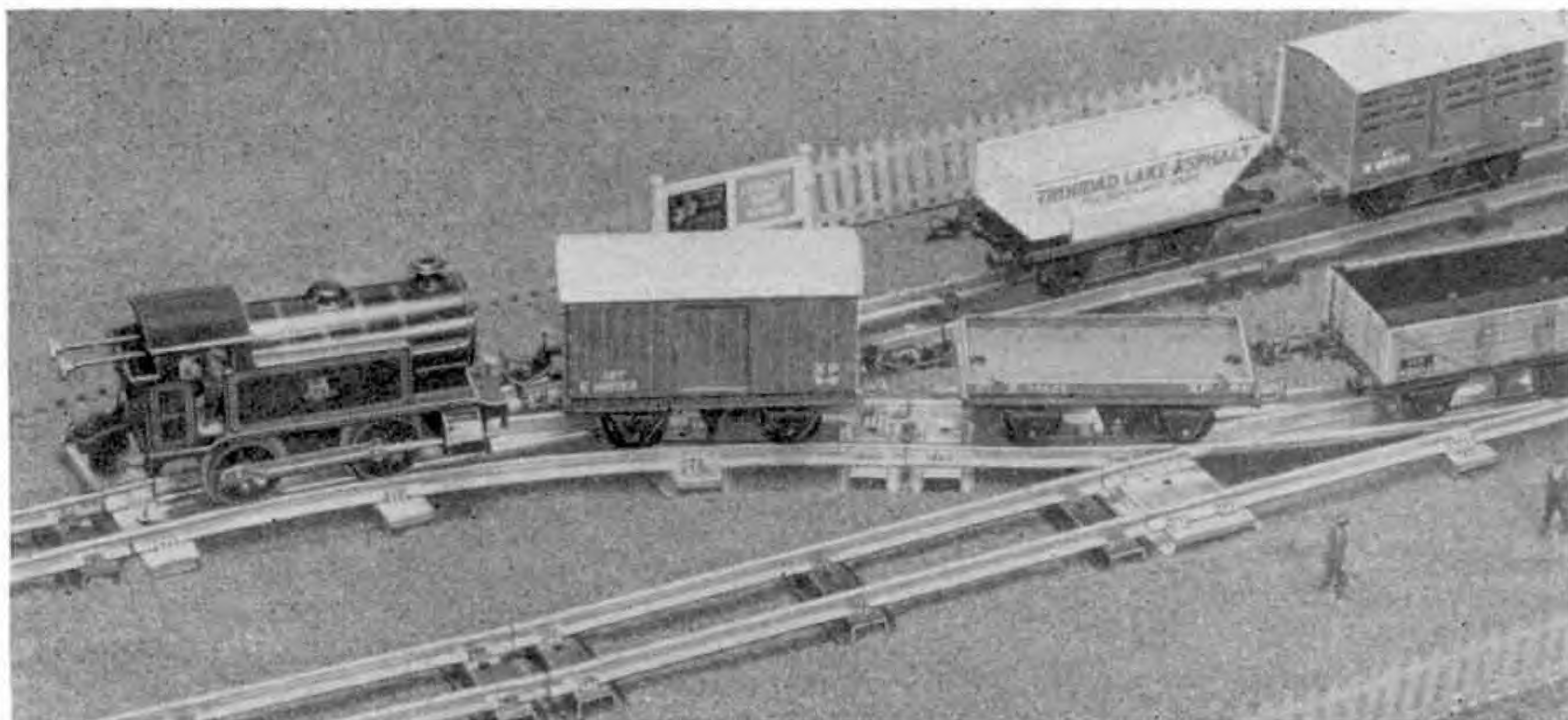
bank or banks and naturally we have to provide some space between tracks for the movement of the Dinky Toys road motors that act as feeders to the railway.

It adds to the interest if a system can include perhaps one siding that is made to serve some industrial premises. Here again arrangements can be varied considerably according to the ideas of the individual owner. An elaborate set-up is not necessary as this, if fully developed, may tend to dwarf the rest of the railway. A plain opening in the boundary wall at one part of the line can easily be supposed to serve a factory or plant, a simple building, and perhaps one or two additions round and about, being sufficient to give the suggestion of activities "over the wall".



The "hole in the wall." A train of vans leaving a factory yard that has its own siding. The track outside the walls follows a roadway used by industrial traffic.





A HORNBY Railway really begins to develop once the first set of Points is added to the original plain track. When more Points are added we get a choice of routes for our trains and then our railways become really fascinating.

When planning extensions—always a joyful experience—it is well to keep in mind that the straight section of Hornby Points has the same length as a standard Straight Rail, while the curved section, either 1 ft. or 2 ft. radius, corresponds

with the respective Curved Rail. This means that alterations to a layout made necessary by the introduction of Points need not be extensive. The Points in fact will just fit in where before there was just a Straight Rail or a Curved Rail. So simple layouts of the circular or oval form can easily be developed into combinations of the two and they can go on to include loops, sidings and other extensions.

But Points do much more for us than give us sidings and loops. They also provide means of connecting two or more main running tracks together, and when used in this way the two of them form what is usually known as a crossover. Such an arrangement appears in the illustration at the top of the page, where two Right Hand Points are seen to connect two running tracks. This arrangement will be familiar to most of those readers who

like to experiment with different layout plans, and who are constantly changing their track arrangements to obtain better running or more variable working, or who simply want to put down something different from what they have had before.

A very good example of what can be done with Hornby Points and other rail components is the layout of *M.M.* reader

M. A. Lang, of Lower Hutt, New Zealand. This is shown in diagram form on the opposite page. It is a permanent line, with space for

## Points and Crossings made Easy

the operator in the centre, and it provides plenty of scope for train running. What should be done with Points is evidently well understood by our New Zealand enthusiast, who uses them correctly. There are several sets of crossover Points, all laid trailing to the direction of travel in the proper way, and there are also several plain turnouts, each with a definite and sound purpose.

Details of the individual rails required for the system are not available, but the layout

is one that is capable of a good deal of extension and development while being a perfectly good working system in its present form. There is one main line passing station, which bears the name *Waterloo*, and a terminus known as *Melling*, which is in the bottom right hand corner of the diagram, and there are several branches projecting from the main tracks.

A Hornby goods train is crossing from one track to the other through Points laid out to form a crossover. In this instance two Right Hand Points are used.



Attention to detail is a strong point on this system, for our reader writes that additional wooden sleepers are placed in the spaces between the standard Hornby tinplate ones and when the whole track was screwed down to the baseboard these new sleepers were all painted. This must have needed a considerable amount

Diagram of the Hornby railway of "M.M." reader M. A. Lang, Lower Hutt, New Zealand.

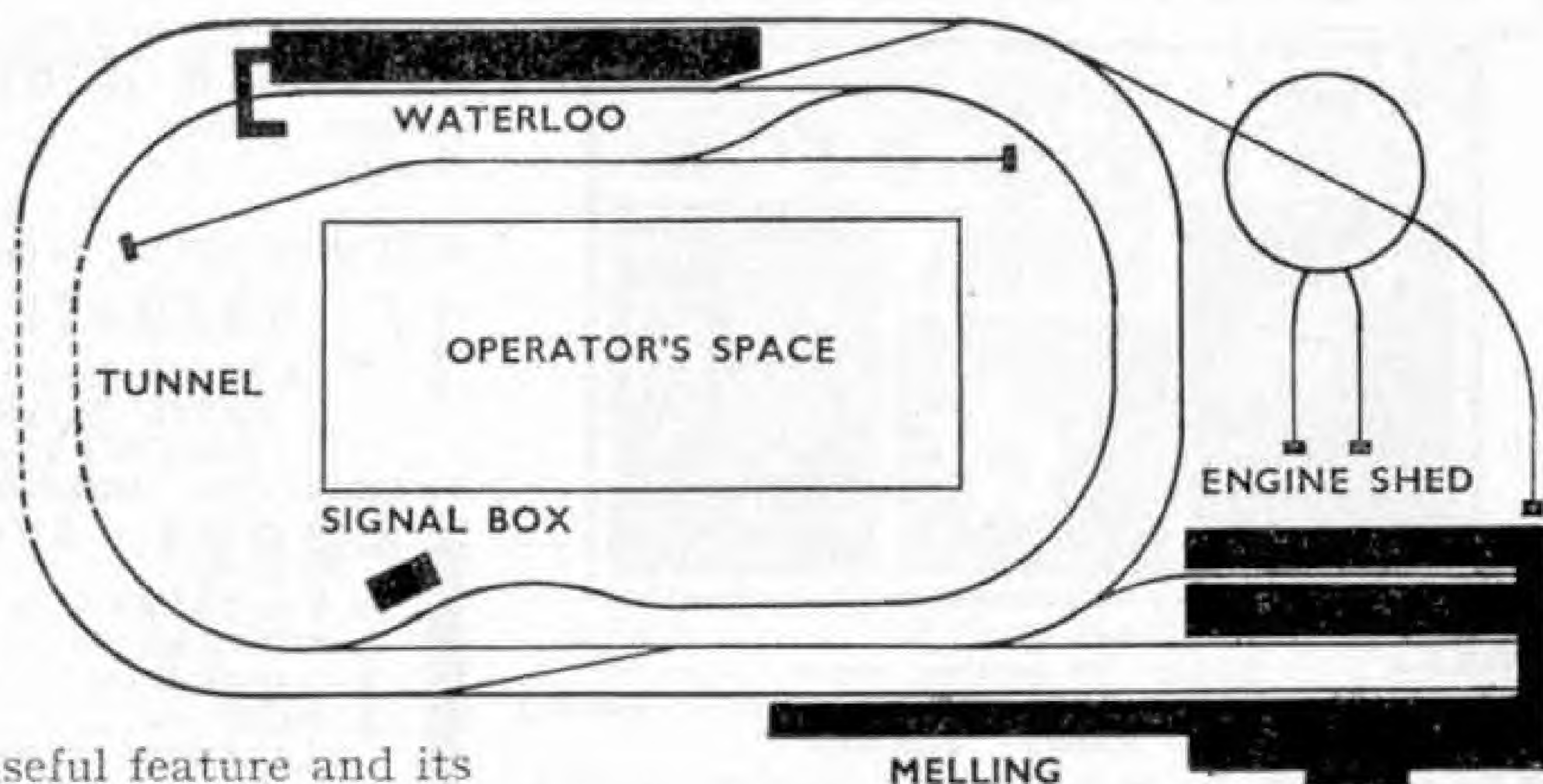
of patience to complete, but the result is no doubt worth the effort.

The turntable is a useful feature and its situation near *Waterloo* allows engines to be turned and got round trains that have arrived from the terminus. It is true that they have to travel round the oval to regain their trains at the opposite end, but that is a minor criticism. Another crossover to the left of *Waterloo* would be ideal, but that must wait until more space at this corner is available.

In this operation the presence of two sets of crossovers in the main line is of considerable advantage. Such working shows that although there is only one actual terminus on the line, trains can readily work a "there and back" service between *Waterloo* and *Melling*.

Now for Crossings. These are important

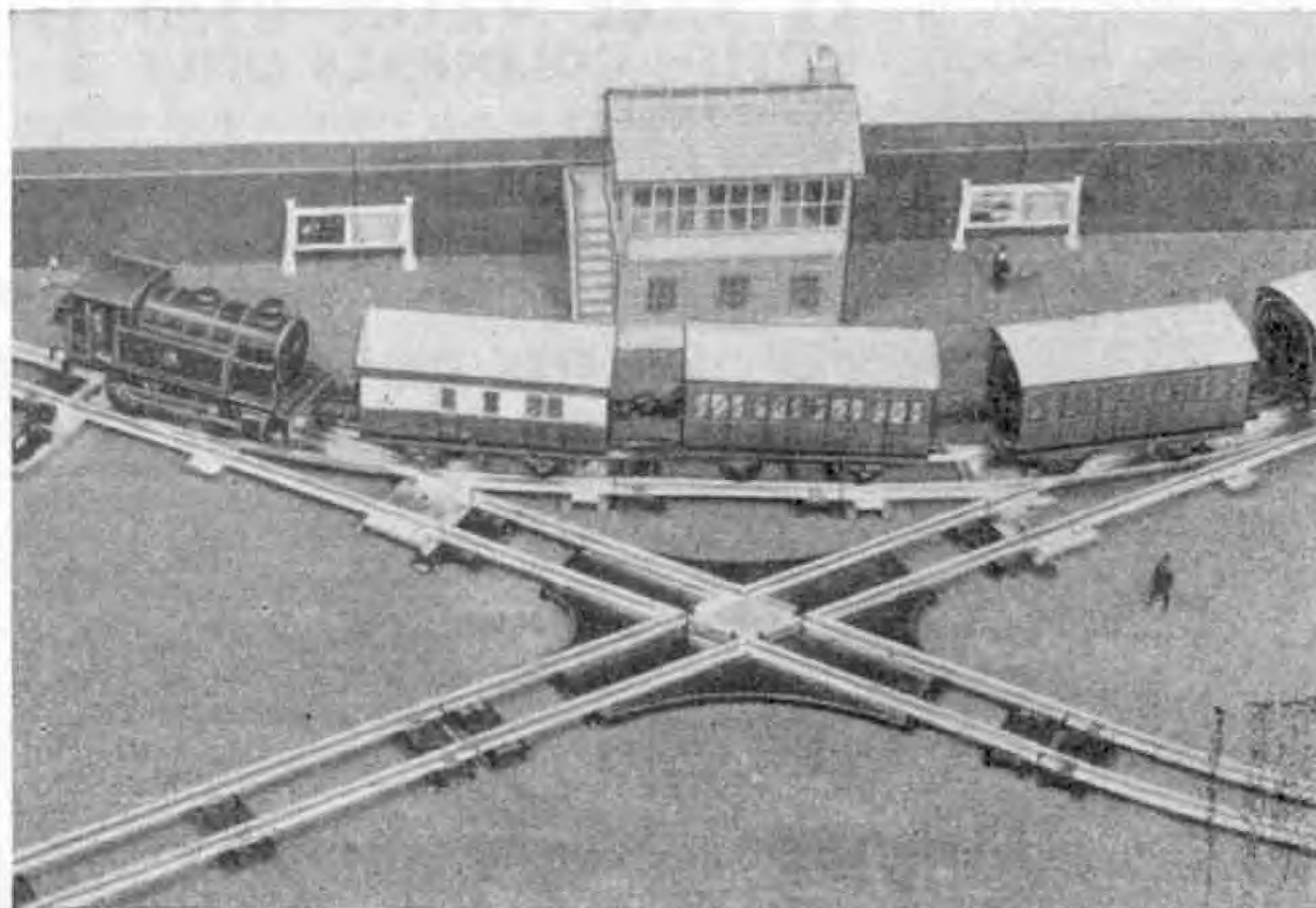
components in the Hornby system and they can be used in various ways. Their use allows two routes to intersect, and perhaps the best-known instance of this sort of thing is found in the popular form of layout known as the Figure 8. Almost all Hornby



railway enthusiasts must have used a Figure 8 layout at some time or another.

A point that may puzzle beginners is the fact that both Acute-Angle and Right-Angle Crossings in the Hornby system are available in 2 ft. radius and 1 ft. radius patterns. Actually Crossings in themselves do not have a radius in the same way as Curved Rails do—their lines are not curved! But the Hornby Crossings are so proportioned that they fit correctly in layouts incorporating either 2 ft. or 1 ft. radius Curves and Points, so that description is a convenient method of distinguishing between the two patterns. The arms of the 1 ft. radius Crossings are longer than those of the 2 ft. kind.

Crossings can be used in conjunction with Points and no doubt most of you will have experimented with different layouts including both types of components. An interesting combination is shown in the lower illustration on this page.



An interesting combination of Hornby Points and Crossings. In this special instance a CA1 Crossing is mated with PL2 and PR2 Points.



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**WRIGHT'S STAMP SHOP**  
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# Stamp Collectors' Corner

By F. E. Metcalfe

## TREE-FERN LAND

ON 18th July, 1855, New Zealand issued its first postage stamps, and just a hundred years afterwards, the Dominion has issued another three stamps to commemorate that philatelic occasion.



A hundred years is a long period to a new country like New Zealand, and a lot of stamps have been issued during that time. While I have previously referred to its stamps, I feel that I cannot let such a commemoration pass without again mentioning them. New Zealand's first issue consisted of a 1d., 2d. and 1/- stamp. They showed a full-faced portrait of a youthful Queen Victoria, and a glance at a catalogue shows how rare some of these stamps

have become. The first set, was imperforate, but later there were releases in the same design, some of which were perforated in a primitive sort of way, yielding catalogue references to "pin-perf" and "rouletted."

To explain a pin-perf, this means just what it says. Pins made the perforation holes. Today, of course, the pins cut out a tiny circular of paper, but originally they merely pierced the margins of the stamps. As for rouletting, here we get tiny cuts. An example of this form of perforating can be found on the small or "bantam" stamps issued during the second World War by South Africa.

I have already remarked how rare some of the "full-face" early New Zealand stamps are, and things have been made worse by the way they have been collected by some of the specialists who have multiplied—and magnified—the varieties to such a degree, that only those with unlimited time and cash at their disposal can hope to get together any kind of a representative showing. But why worry? There are plenty of cheaper and quite attractive stamps to be found in the New Zealand group, without bothering about the "full-face" designs.

Before I leave this set, however, I must mention that one of the three stamps issued to commemorate the first set is an adaptation of the first design. And the artist responsible for this latest "full-face" is J. Berry, an Englishman living in New Zealand.

Turning the pages of the catalogue, at the New Zealand section, one cannot help



but wonder at the number of perforation varieties that are to be found in most issues. The question of paper also enters a lot into the collecting of New Zealand stamps, and as various kinds have been catalogued, all who are interested in such things will find plenty to engage their attention. I remember

the late Stanley Phillips, who was then Editor of Gibbons' Catalogue, telling me that he rather regretted ever having listed the

various papers, for New Zealand was complicated enough without them. But there are specialists who simply revel in any tough philatelic assignment, and paper varieties, perforations, retouches, etc., etc., all come alike to them. But I think that on the whole it is the "full-face" designs that are most sought after, and as the new commemorative set contains a good representation of one of these, all of us can now afford to have one.

I know that there are many readers of these comments who only want to collect in a simplified manner, and I suggest that they should make a start with the pictorial set issued in 1935. Personally I think that this set contains one of the most beautiful stamps ever issued. I refer to the 2½d. value. Another beauty is the 3/- value. And to those interested in strange birds and animals—not overlooking that fine swordfish on the 5d. stamp—the ½d., 1d., 8d. and 1/- values will certainly appeal. And which of us could resist the picture, on the 2/- value, of



Captain Cook landing at Poverty Bay?

As with other New Zealand issues there are a number of perforation varieties in this set, and those perforated 12 are worth

a few words. They are known to collectors—who never seem to be short of an apt description—as the "Blitz perfs," because the printers of this set when the war broke out were Messrs. De La Rue. Their works were blitzed, and Messrs. Waterlow & Sons, working with De La Rue plates, but with different perforation machines, took over the job of printing the stamps. Hence the change in perforation.

However, to start with just let us collect a set of nice used copies, at the lowest price we can find. We'll ignore the perforations, and just mount the set for what it is.

The next definitive set is a neat little affair showing a good portrait of King George VI. The values run from ½d. to 9d. in the small format, and then from 1/- to 3/- in the larger size. The Commonwealth Catalogue gives the set all together, which is much more convenient. There are some good shades and watermark varieties, but again these can be ignored and a nice used copy of each is all we need go after to start with. They are cheap used, though the 1½d., red-chocolate, might not be too easy to get hold of. Our next definitive set is that which was issued in 1954.

Oh, and by the way, I had better mention that the 1½d. value was issued in 1953, for in December they ran out of 1½d. stamps and had to put the QE stamp on sale before 1st March, 1954, which was to be the date when the whole set was to be issued.

Now those three sets

(Continued on page 458)







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For other Stamp Advertisements see also pages 454 and xvi

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# Stamp Gossip

## HORNS AND THINGS

THERE are a host of stamps that I would like to ask the Editor to allow me to illustrate this month, but lack of space forbids. I cannot resist choosing a real pippin from Switzerland, however. It is the 20c. stamp issued 15th February as one of a set of four, and for publicity purposes. This



particular value is connected with the Interlaken Alpine Festival, and shows an Alpine herdsman—with a horn!

For a long time now Switzerland has been turning out set after set of stamps, each more interesting than the last, and tastefully arranged they make a fine show. But I am afraid they rather lack that something which is one of the added attractions of philately. In a word, they are a bit too perfect in manufacture. We never see a nice shade, or a re-touch,

or a re-entry. It is in these things that the line engraved stamps of our own Commonwealth score, for we thrive on printing imperfections! Yet modern Swiss stamps can be strongly urged for young collectors at least. They are fine for the grown up "thematists" also.

## STAMP DAY

And what do you think of the latest Saar "Stamp Day" release? Isn't it a whopper. In fact, it is so big that the Editor has put it where there is more room for it, and you will find it on page 427. It's also a fine bit of engraving.

Several countries issue a stamp in yearly commemoration of postage stamps, and the handsome revenue to be obtained thereby is not to be sniffed at either, for not many of these stamps will be used.

Certainly 15 francs for a couple of inches of paper is not a bad return, even in these days of high prices.

These stamps about stamps are very popular with collectors, as is perhaps only natural, and an attractive collection can be made of them, one that keeps interest alive and which can be added to from time to time. The most popular stamps of this kind are those issued to commemorate first stamps of all. I remember when the centenary of the "Penny Black" came round, our authorities did not want to commemorate this, the first of all stamps. The Postmaster General of the day told us in Parliament that the time was too short to prepare such an issue—they had only had ninety-nine and



a half years to think about it—and of course the fact that we were at war was another excuse. Yet other countries were bringing out new sets every week, a fact that was not mentioned. In the end we got a dull and uninspired set, very different from this latest Saar effort.

## A TV STAMP

I would like junior collectors to take a good look at this French Television stamp, and to see if it rings a bell. The fact is that stamp dealers think



that TV is having a great effect on the habits of youth, and that instead of going in for such hobbies as stamp collecting, they are now using their spare time looking-in. Is that true?

Those who cater for young collectors are not doing quite as well now as they did before we had television to beguile us. Yet in the U.S.A., where television is more in vogue than it is here in Britain, I have not heard of any falling off in interest. It would be a great pity really if stamp collecting were to suffer from television, for the former teaches as well as amuses. Perhaps any falling away there may have been is only temporary. Personally, I like to look-in occasionally—but I still like my stamps.

## PHAETON FLAVIROSTRIS

Now what on earth can that be? Not that lovely graceful Longtail Frigate Bird depicted on the new 8d. stamp of Bermuda issued 16th May?

Alas, that is just what it is, believe it or not. In 1953 Bermuda issued a really beautiful set of pictorial stamps, as I mentioned at the time. And recently the need for an 8d. stamp was felt, so the design already on the 6d. stamp

was adopted. The stamp illustrated is the result. Lots of M.M. readers will want a copy. Well, there will be plenty to be had for about 10d. mint, and the same for used, if you buy at once. If you are patient you'll get a used copy for only a copper or two, for this value will be used a lot.

## A MILLION LETTERS

An American stamp paper recently had a strange story. Apparently an American firm of refrigerator manufacturers conceived the idea of posting from Bahamas a million letters, supposed to be from a housewife enjoying a holiday there on the money saved by using the products of the firm. There were not a million 2d. stamps on hand, so according to the story a special printing has been made, mail bags have been borrowed from other colonies and extra premises hired, with more staff from the U.S.A. itself. After all this it looks as though used Bahamas 2d. stamps won't be very scarce!

## A TIP

Finally, here is a good tip for you to follow up. Mint sets of India's 1952 Poets and Saints set are now quite scarce, although one can be bought—when found—for about 3/6 or so. Buy the first set you see at that price, or a little more.





**Testing an Aircraft Undercarriage—***(Continued from page 405)*

is retracted, a horn sounds, the electro-magnetic release is operated and down drops the undercarriage complete with weights. As it approaches the side load table it automatically fires the table mechanism and the whole assembly arrives at the ground with all the appropriate loads reproduced and recorded. This part of the test takes approximately 2/10th of a second. By this time, of course, there is quite a lot of noise, some smoke from the tyres and a not unpleasant slight smell of rubber.

It is at this stage that the technicians develop their records and get down to the important task of analysing results and writing up reports, providing valuable records which are to guide and assist them in their experiments and in keeping pace with the requirements of future aircraft design.

**Making Meccano Bevel Gears—***(Cont. from page 417)*

designed tool with four cutting edges, which you can easily recognise in the illustration on page 416. Each blank in turn is placed in position on the machine and the milling cutter is mounted in such a position that when it is rotated, and brought up to the blank, its cutting edges act on the angled face where the teeth are to be formed.

Both workpiece and milling cutter rotate. The latter runs at high speed, and it is fascinating to watch metal being cut away and the teeth being formed as the blank rotates more slowly until, when the blank has made a complete revolution, the ring of teeth is complete.

As you will no doubt realise, the bevel gear as you know it is not yet complete. The eight holes that you use for such purposes as fixing the bevel gear in position in some models are next pierced on a press and then the holes in the boss for set screws are drilled. These holes are tapped to form in them threads matching those of the Meccano Bolts used to fix the gears on the Axle Rods used as shafts in working Meccano models.

It will perhaps come as a surprise to many of you to learn how many different operations are necessary in the production of this single part. There are six on the capstan lathe, where the blank is formed. Then follow the cutting of the teeth, the piercing of the holes in the face of the gear, and the drilling and tapping of the boss. The fitting of the set screw follows, and so we have as many as 11 operations. The result is a bevel gear that is sound and solid in construction, with its teeth accurately cut, and the set screw holes in the boss accurately threaded, to ensure that in use the set screw will hold the part firmly on its shaft, with the Bevel Gear teeth meshing perfectly with those of the  $\frac{1}{2}$ " Bevel Gear, Part No. 30a, with which Part No. 30c is used by model-builders.

**From Manchester to Sheffield—***(Cont. from page 420)*

the opposite direction. Instead of taking current from the overhead line they acted as generators and returned current to the line, the effect being to check the speed. With the air and vacuum brakes completely off, the train ran freely down the slopes, held to the speed required by the regenerative action of the motors.

A stop was made at Penistone, about six miles below Dunford Bridge, and for this the normal brakes of the train were brought into operation. They were replaced by the regenerative braking on re-starting past Barnsley Junction, where the branch from Wath, also electrified, joins the main line. Down we went through the short Thurgoland Tunnel, a plunge into darkness of the traditional kind, but now without smoke or dirt, and on at a steady controlled pace past the lovely woods at Wharnccliffe. We rounded the sharp curve at Oughty Bridge without changing speed, for there the outer rail is canted to a height of about 6 in., which must be one of the highest cants in the country, and soon we were in the outskirts of Sheffield and slowing down for Victoria Station. There we came smoothly to rest dead on time.

**Stamp Collectors' Corner—***(Continued from page 455)*

will be easily come by. And then there are the commemorative sets, which are mostly a joy as far as the colourful designs are concerned. The set which I like the best is the one issued in 1940 to commemorate the Centenary of British Sovereignty. The designs are wonderful. The Peace issue of 1946 is another fine set. Then we have the Otago Centenary, Canterbury Centenary issues, etc., and the "Health" stamps that come out every year. Yes, either on simplified or specialized lines New Zealand is a grand country to collect, and this latest commemorative set includes some wonderful stamps. Better still, the buying of a set will only knock us back about a shilling. Isn't that the best part of it?

A final word, if you feel you cannot go back to the 1936 set, why not start from the Queen's set of 1953-54. But be sure that you only have fine copies. Take no heavily cancelled copies or your collection will never look nice.

**Easy Model-Building—***(Continued from page 433)*

the  $\frac{1}{2}$ " Pulley rotates clockwise also. In Picture No. 4 the arrow shows that the  $\frac{1}{2}$ " Pulley turns anti-clockwise, or in the opposite direction to the Pulley in Picture No. 3. This change in direction is brought about by twisting the Driving Band half a turn before it is placed round the Motor pulley. So you see that by making this simple change in the arrangement of the Driving Band the  $\frac{1}{2}$ " Pulley can be made to turn in the direction required, no matter what type of model it is arranged to drive.

**JOHNSON PRINT-A-SNAP PACK**

Everyone starts practical photography at home by trying their hand at making contact prints, as neither experience nor complicated equipment are required for this interesting job. For the beginner, or for the experienced amateur photographer who occasionally wishes to make some extra prints, the *Print-a-Snap Pack* introduced recently by Johnsons of Hendon Ltd., the well-known manufacturers of photographic chemicals and apparatus, is a most economical proposition, as it contains everything required.

The Pack is in the form of a strong wallet that can be used afterwards to hold the finished prints, and contains a simple cardboard printing frame, a packet of the new JOHNSON CONTACT PAPER, and packets of developer and fixer, together with very full instructions. Packs containing either 24 sheets of paper  $2\frac{1}{2} \times 2\frac{1}{2}$  in., or 16 sheets  $2\frac{1}{2} \times 3\frac{1}{2}$  in., are available, each with the appropriate printing frame. The price for either size is 3/- including Purchase Tax.

**This Month's Special Articles**

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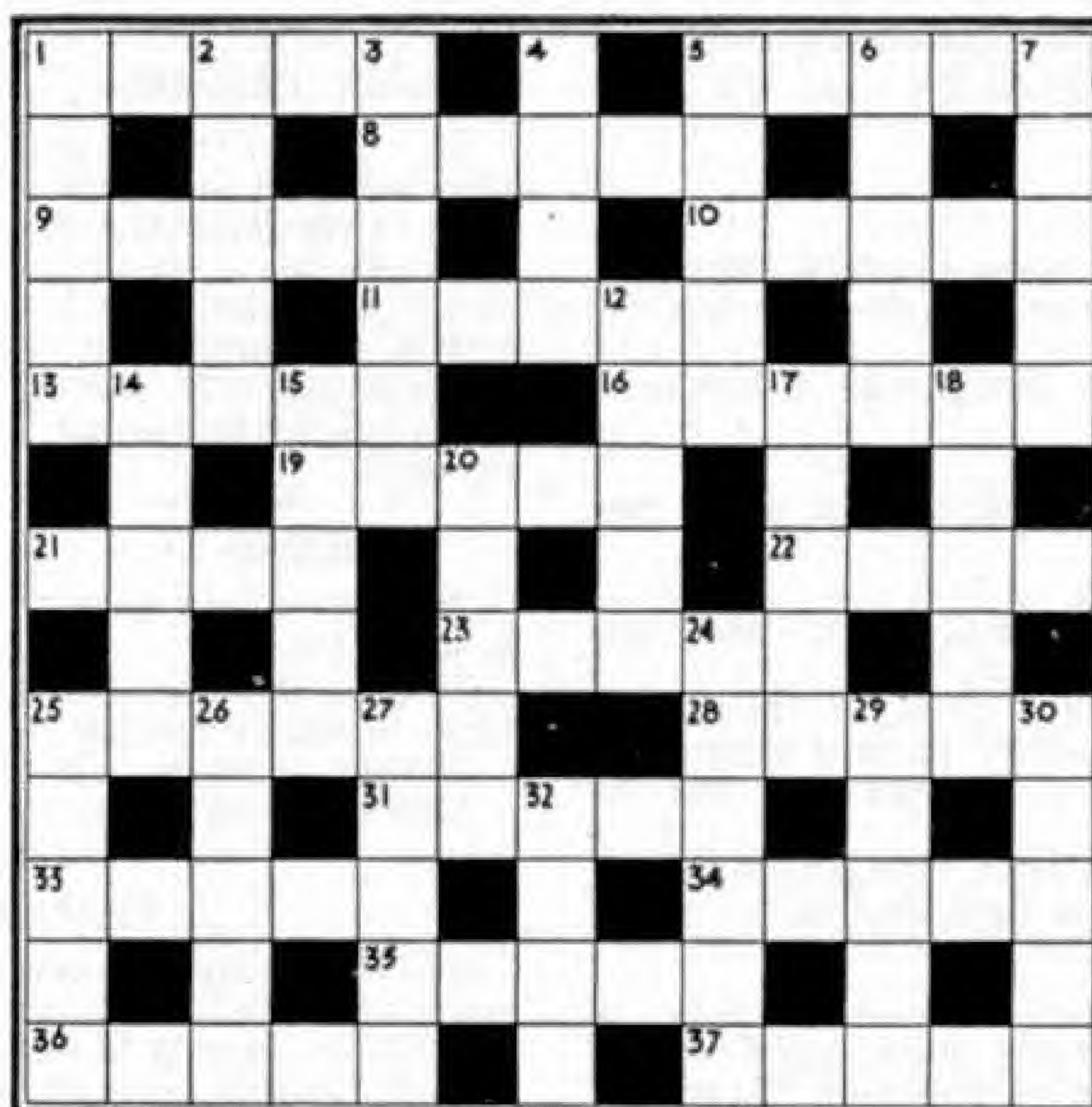
# Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd.  
Unsuccessful entries in photographic, drawing and similar contests will be returned if  
suitable stamped addressed envelopes or wrappers are enclosed with them.

## An Easy Crossword Puzzle

### CLUES ACROSS

1. Select part
5. Funny
8. Girl's name
9. Some rivers have one
10. A runner
11. Heart throb
13. Speeds
16. European country
19. Musical instrument
21. Cultivate
22. Roguish
23. Road or bridge charges
25. Wise counsellor
28. Volatile liquid
31. Greek letter
33. Maxim
34. Edge
35. Relative
36. Pleasant drink
37. Gentle push



### CLUES DOWN

1. Tree
2. Small island
3. Slip or glide away
4. Knot
5. Brooch
6. Island
7. Healed
12. Implement for winding yarn
14. Spoken privately
15. Social distinction
17. Smallest
18. Recess
20. Metric measure
24. Lighten
25. Imitate
26. Well known
27. Smell
29. Paid for service
30. Old English magistrate
32. Insects

This month we provide another of our popular Crossword Puzzles. It follows the usual lines, in that there are no traps in the clues, or alternative solutions; and every word used, apart from names, can be found in the standard dictionary.

There are the usual two sections in this competition, for Home and Overseas readers respectively, and in each prizes of 21/-, 15/- and 10/6 will be awarded for the best solutions. There will be a number of consolation prizes for other good efforts. If necessary the judges will take neatness

and novelty into consideration when making their decision. Do not cut out the diagram on this page, but make a careful copy of it, and when you have solved the puzzle write your name, address and age on the back of your entry.

Entries should be addressed *August Crossword, Meccano Magazine, Binns Road, Liverpool 13.*

The closing date in the Home Section is 30th September, and in the Overseas Section, 31st December. Post your entry in good time, especially if from overseas.

## Summer Holiday Photographic Contest

The summer holidays provide amateur photographers with plenty of scope for obtaining good snapshots, whether the holiday is spent abroad, at the seaside or in the country, or even just in the home locality. In our second competition this month we invite readers who are photographic enthusiasts to select the best of their 1955 holiday photographs and to enter them in this Summer Holiday Photographic Contest.

On this occasion more than one photograph may be submitted, but no competitor will be awarded more than one prize. The photographs must have been taken by him, and on the back of each

print he must state exactly what the picture represents—and remember to write his name, address and age.

The Competition will be in the usual two sections, A for readers aged 16 and over, and B for those under 16. There will be separate Overseas sections, and in each section prizes of 21/-, 15/- and 10/6 will be awarded. Entries should be addressed: *Summer Holiday Photo Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 30th September; Overseas Section, 31st December.

Your attention is drawn to the paragraph at the top of this page.



# Fireside Fun

Mother: "You mustn't go fishing with Peter, Tommy. He's just getting over the measles."

Tommy: "But mother, you know I never catch anything when I'm fishing."

Second-hand Car Owner: "She looks a bit weather-beaten, I admit. But you should just see her take a hill."

Friend: "Up or down?"

Six-year-old Nicholas came home proudly clutching a miniature motor-car. "Where did you get that?" asked his mother.

"I got it from Johnny for doing him a favour," said Nicholas.

"What was the favour?"

"I was hitting him on the head and he asked me to stop."

"That last thing you sent in was good," said the Editor. "We all enjoyed reading it."

"Well, in that case," said the poet, "I take back what I said in the letter I wrote to you yesterday about my determination never to send you any of my work again."

The Editor slowly shook his head. "Don't do that," he murmured. "It is that letter I referred to."

On a tour through a prison garment factory, a chaplain noticed a prisoner sitting cross-legged sewing overalls. "Good morning," said the chaplain, "Sewing?" "No, Reverend," replied the inmate, "reaping."



"Golly! Is that the time?"

The wife insisted on taking along an enormous pile of baggage, so she and her husband were loaded down when they reached the station.

"I wish we'd brought the piano," said the husband thoughtfully.

"Now don't try to be funny," said the wife coldly.

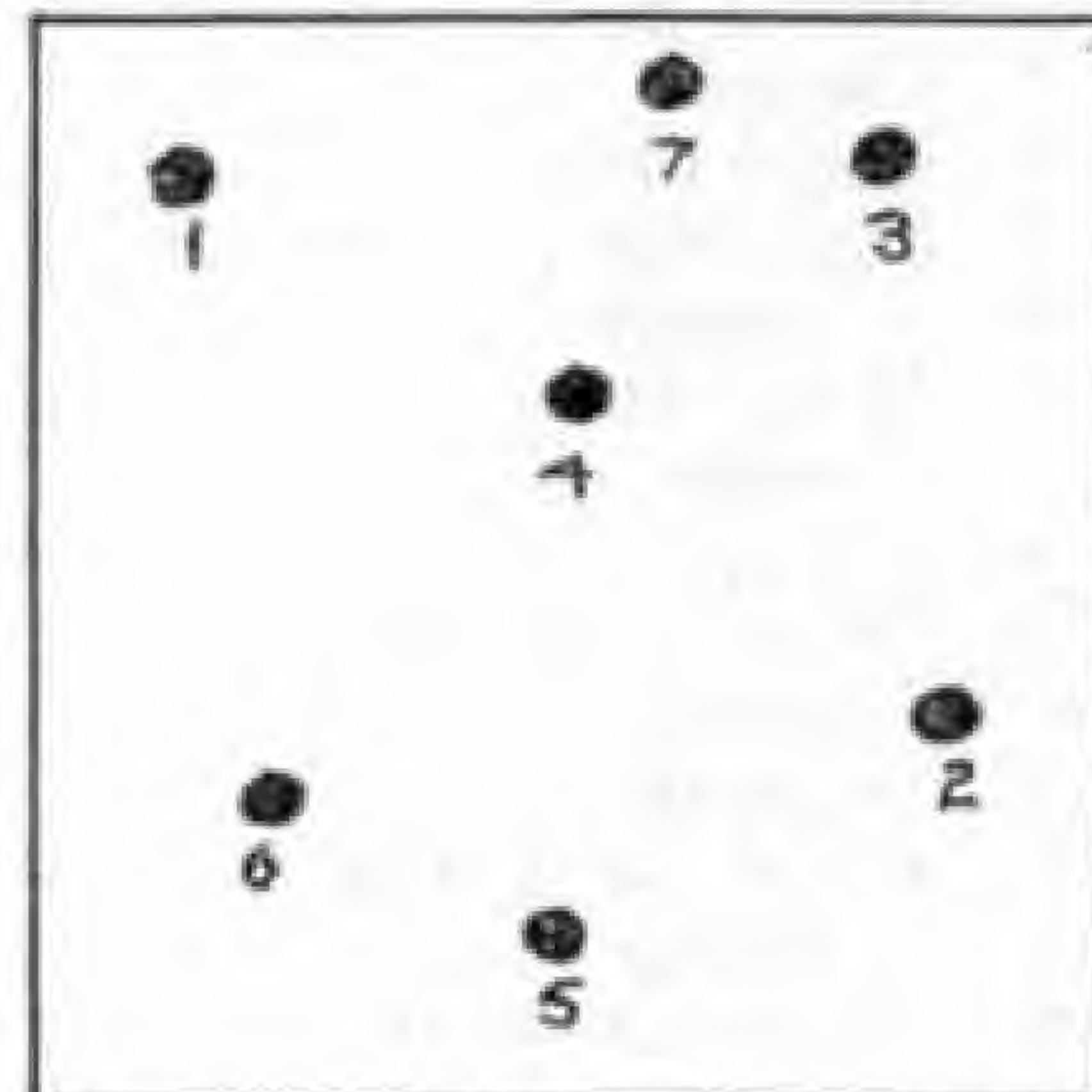
"I'm not trying to be funny," he explained. "I left the tickets on it."

Jack: "My hair is full of electricity."

Bill: "It should be, it's connected to a dry cell."

## BRAIN TEASERS

In the diagram alongside you see seven coins in carefully placed positions in a square. Can you place each coin in a separate space by drawing only three straight lines across the square?



## BEHEAD IT

Behead it and there is a bit left.

Behead it again and there is still a bit left.

Behead it again and you've got it left.

Behead it again and you've got it to a T.

## TWO OF A KIND

The following phrases each indicate either a single word of two syllables or two words, in which the first syllable or word is pronounced in the same way as the second syllable or word. Can you solve them?

1. An American prison
2. Figure in comic opera
3. A native drum
4. A Persian Nightingale
5. An ancient toy
6. A girl's name
7. A special type of bullet
8. Another girl's name

## ANSWERS TO LAST MONTH'S PUZZLES

### "All Blanks" Crossword

The correct solutions to the various clues given in this crossword are shown in the illustration below.

### What Am I?

I am a blacksmith.

### Word Change

The word meaning separated is "divided" and by deleting the syllable "vid" we get the word "died" signifying "passed away."

### Profit or Loss

The friend was wrong, because if the man sold one car for £990 and made a profit of 10 per cent, the car must have cost him £900. If he sold the other car also for £990 and yet lost 10 per cent, he must have paid £1,100 for it. Therefore the man lost £20 on the two transactions.

1	B	2	R	3	I	4	M
5	R	I	D	E			
6	A	L	E	S			
7	N	E	S	H			



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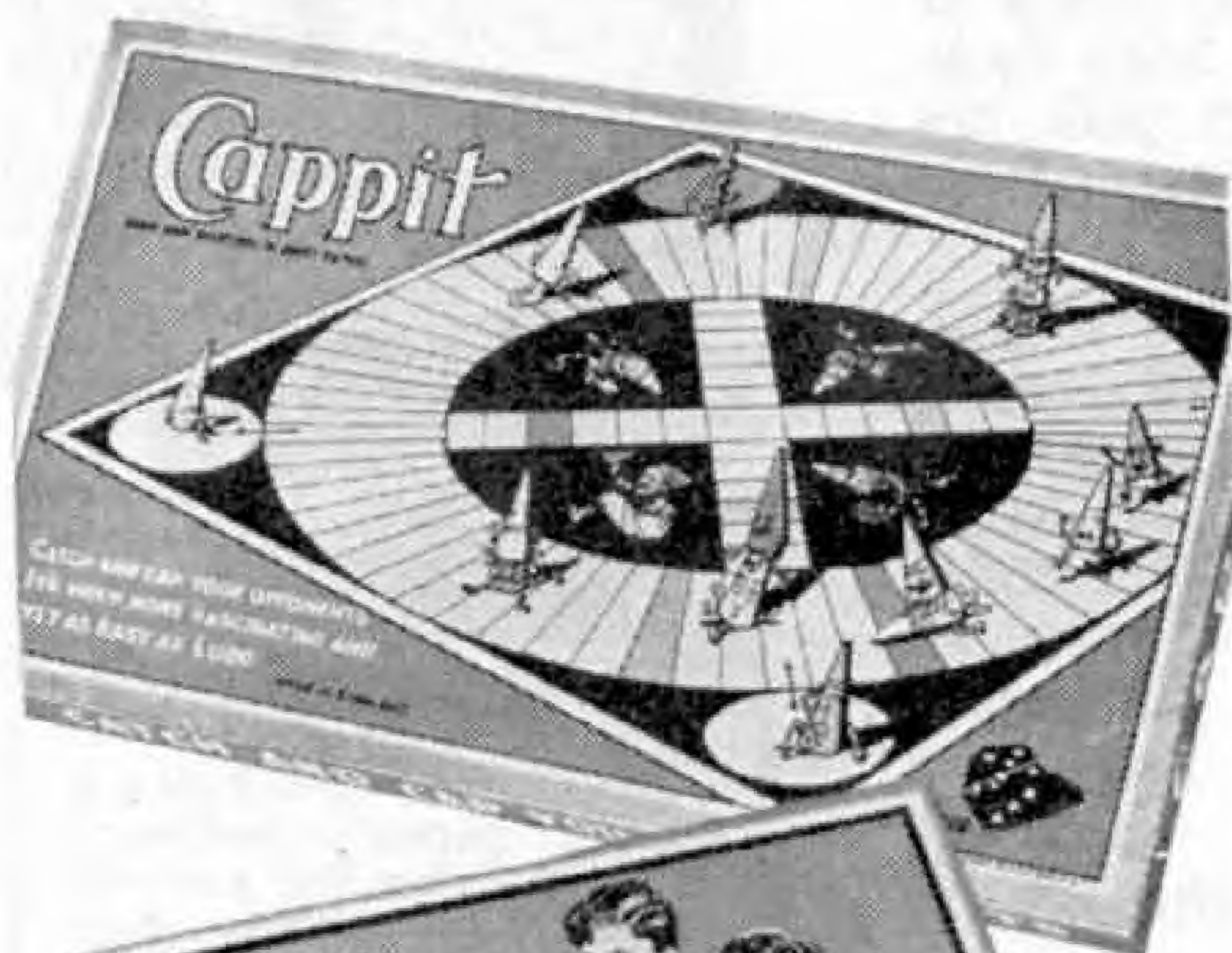
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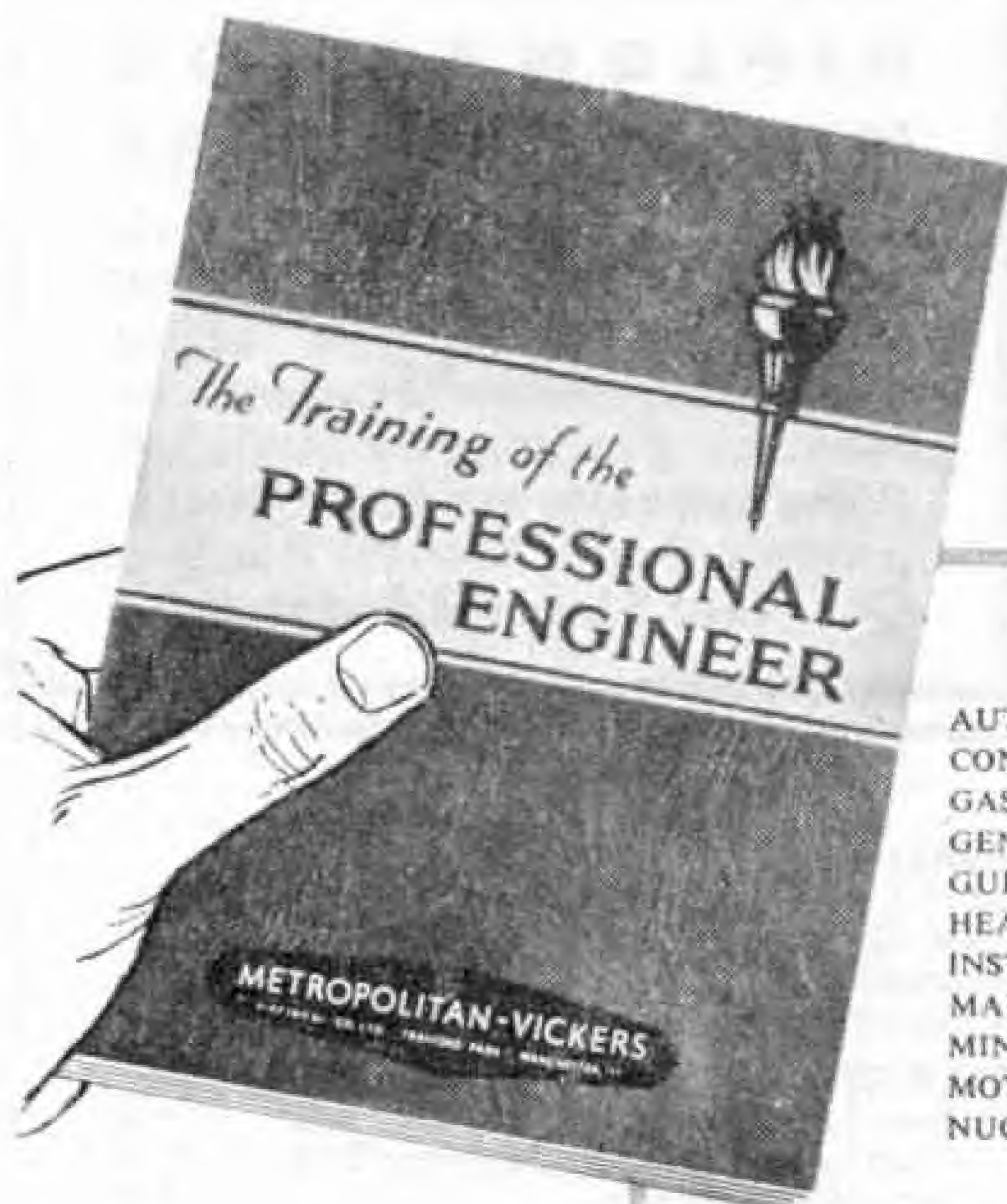
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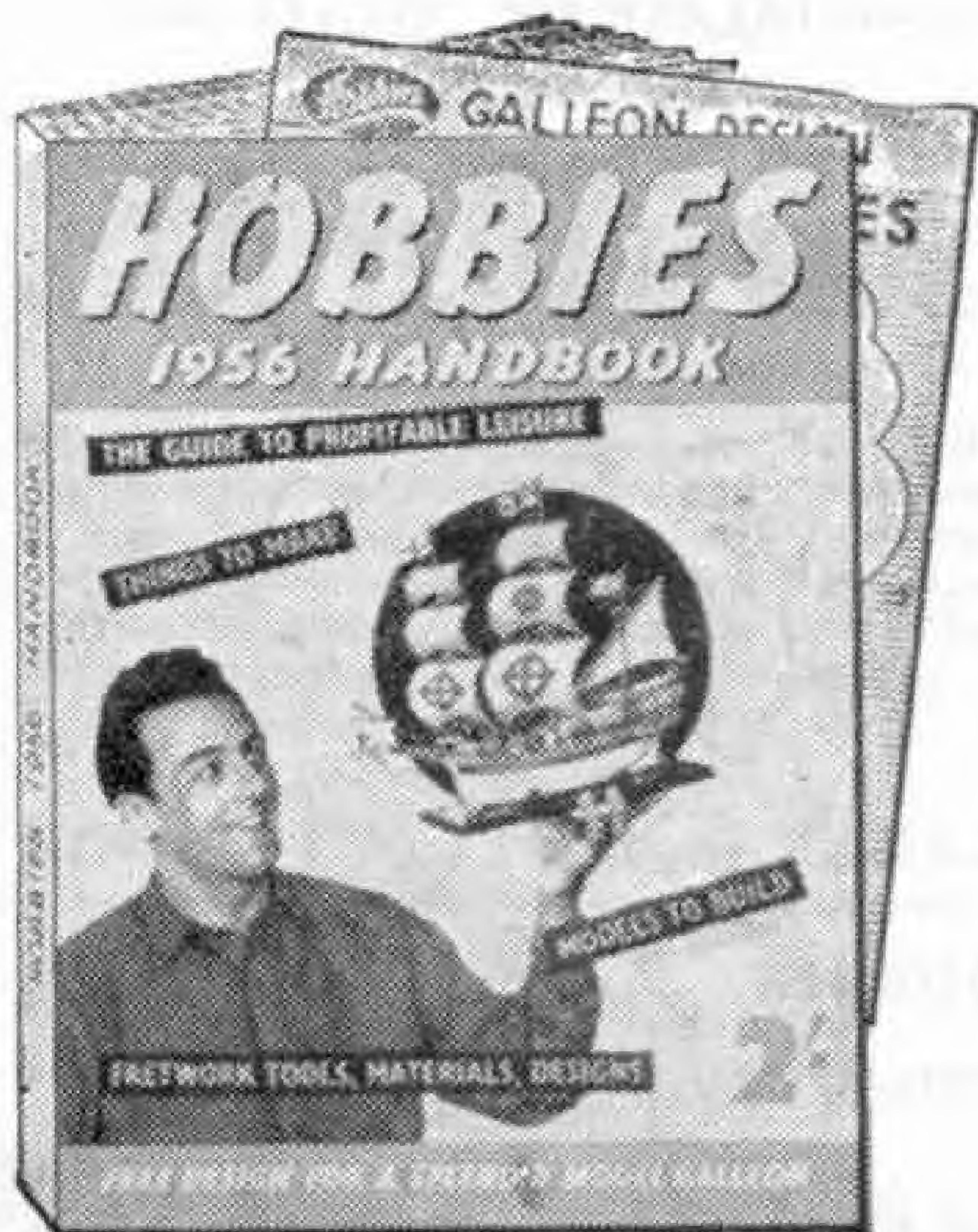
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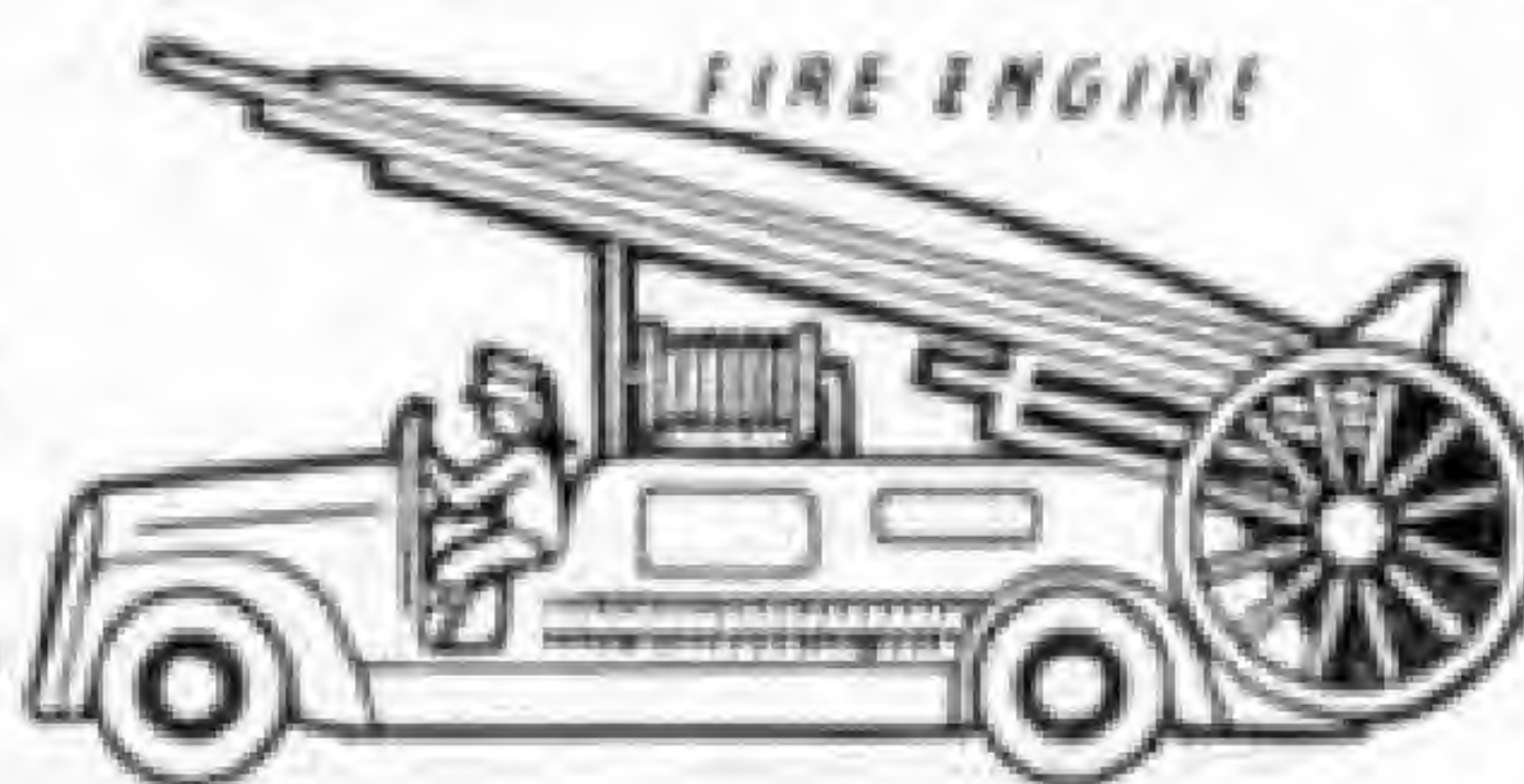


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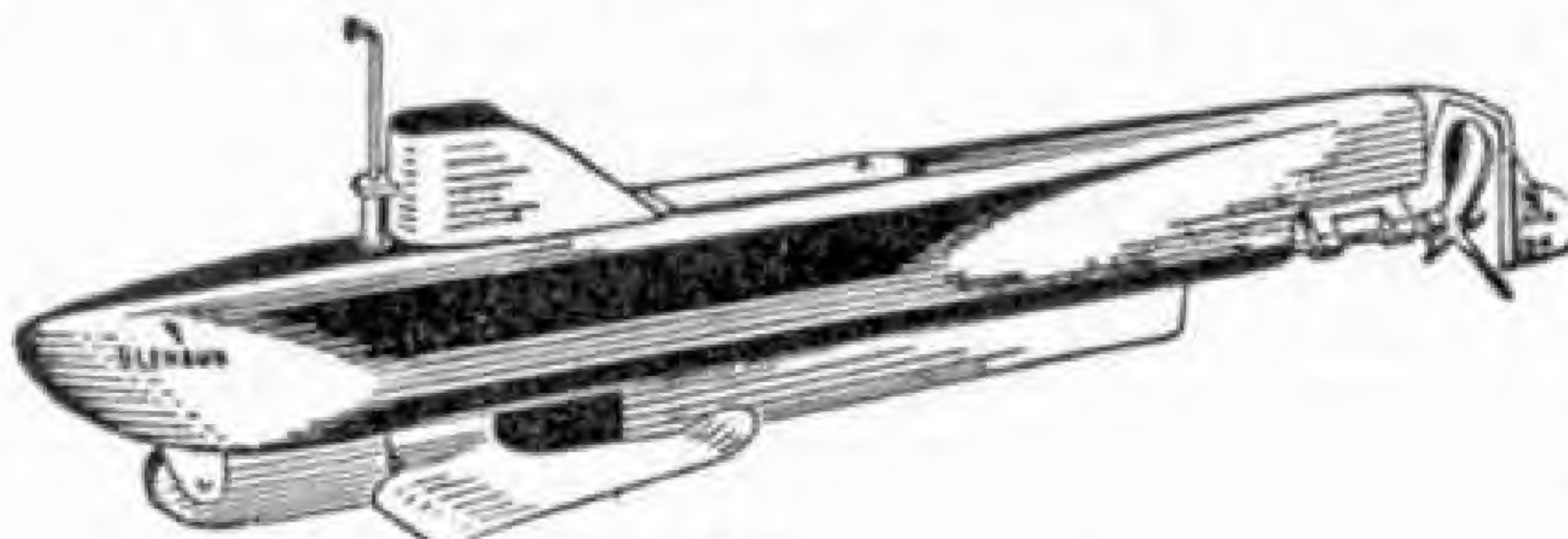
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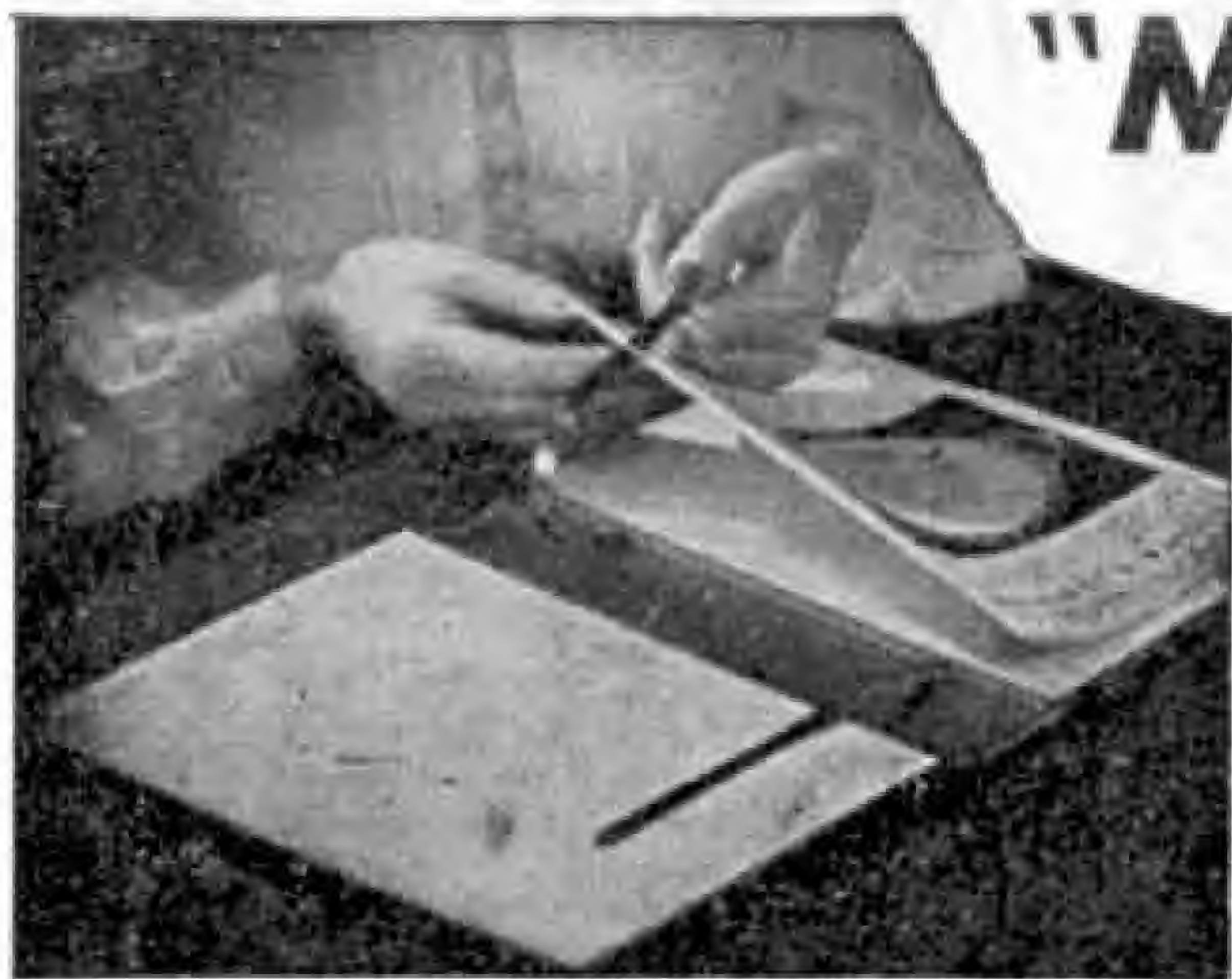
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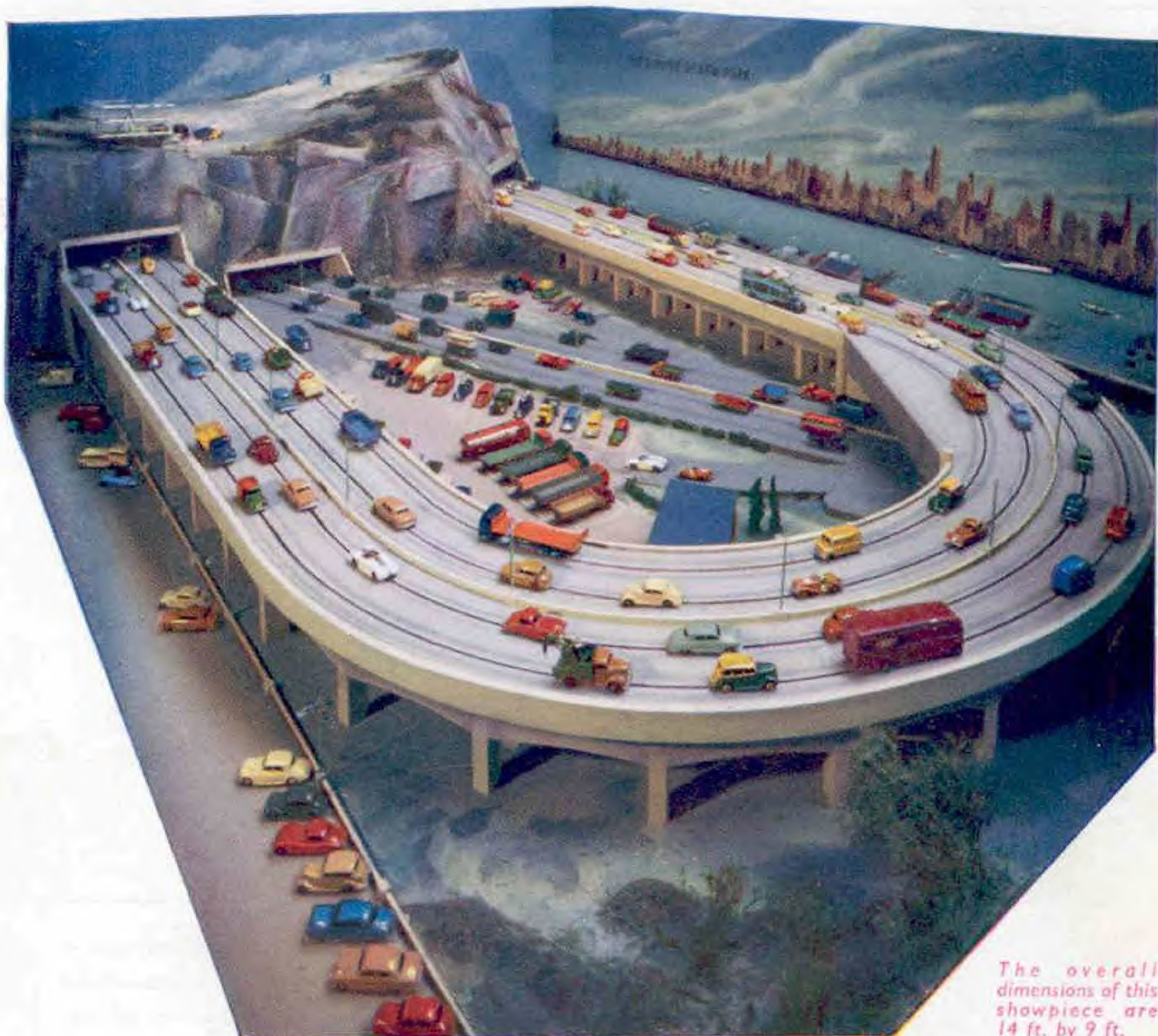
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